Chemical Week

November 30, 1957

Price 35 cents

Special Report, 106 pages of . . . CHEMSHOW COVERAGE

Chemshow at New York Coliseum. Here's the only complete, up-to-the-minute preview of next week's 26th Exposition of Chemical Industries. Who'll be there, what they'll show, how to make the most of your visit . . . . . p. 54

What's ahead for Gulf Coast chemical industry? CMRA-CCDA forecasts for 1965 . . . . . p. 39

Purchasing agents' pet peeves, and how to avoid them . . p. 49

Reichhold's record-setting year. Stock sale pays a dividend in boosted company earnings . p. 75

A McGRAW-HILL PU

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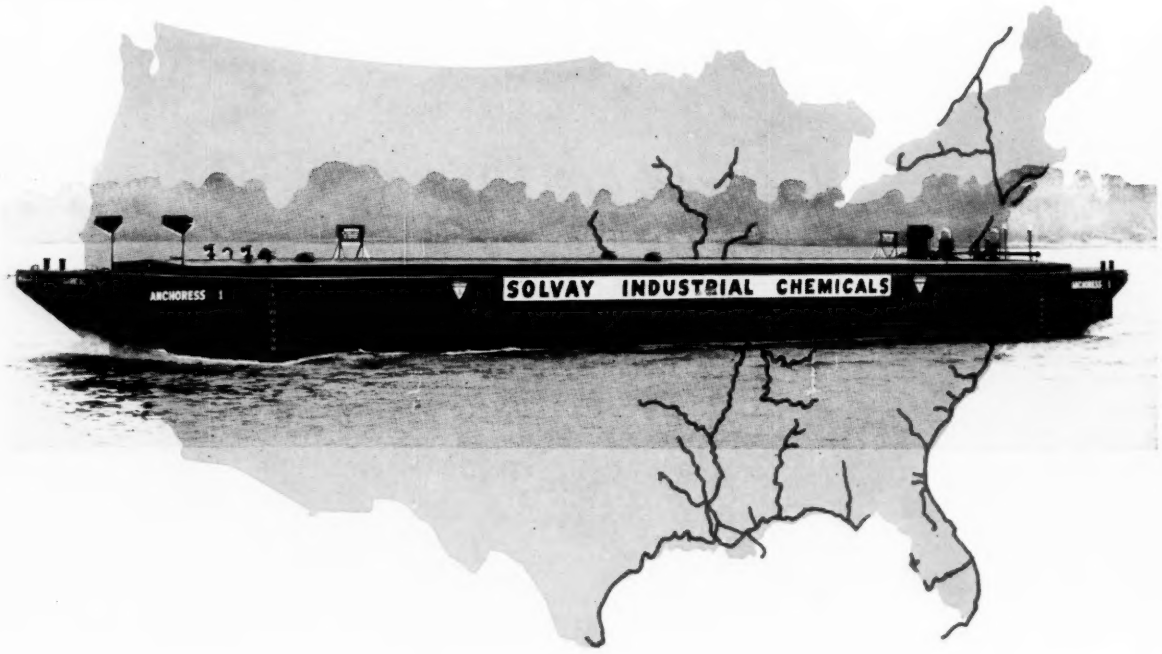

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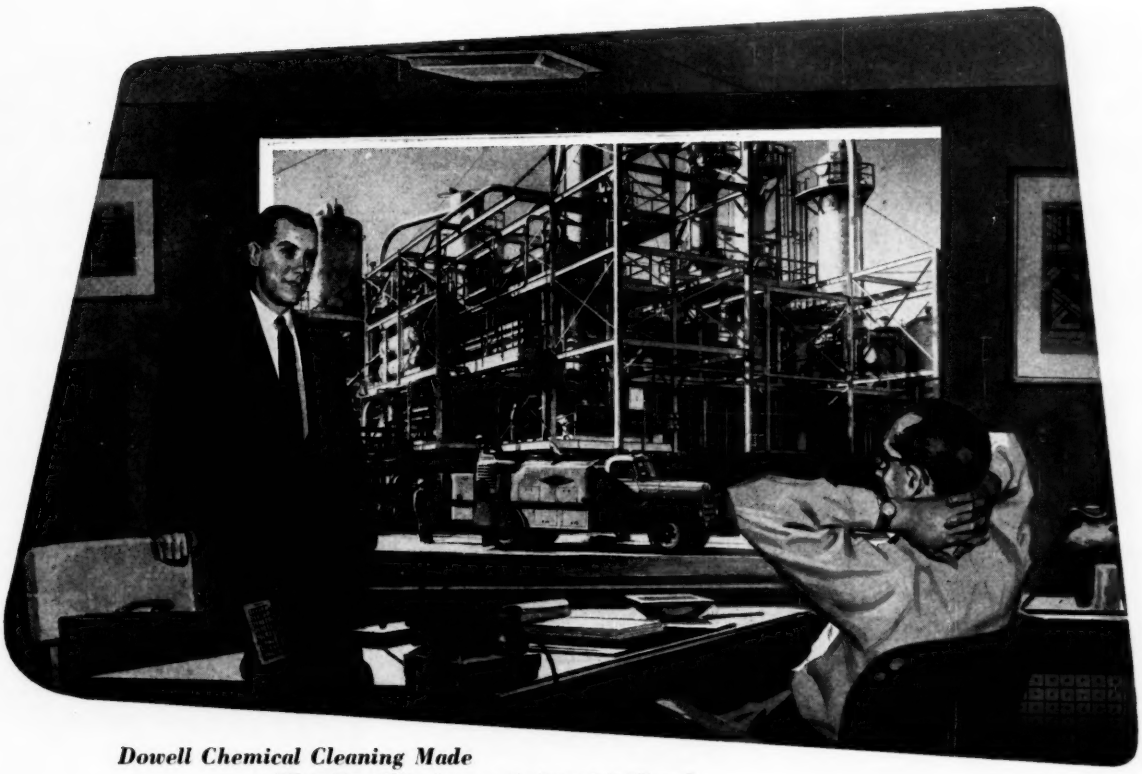

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Chemical Week

VOL. 81, No. 22

TOP OF THE WEEK

November 30, 1957

Special 106-page Chemical Show insert—tear it out and take it with you to the biggest-yet exposition of the chemical industries ..... p. 54

Fermentation bids for more roles in chemical processing, synthesis, as microbiologists gather in New York to celebrate Pasteur's discoveries ..... p. 65

Expanded markets for residual bactericides on textiles may grow out of Sears, Roebuck's promotion of germproofed apparel ..... p. 97

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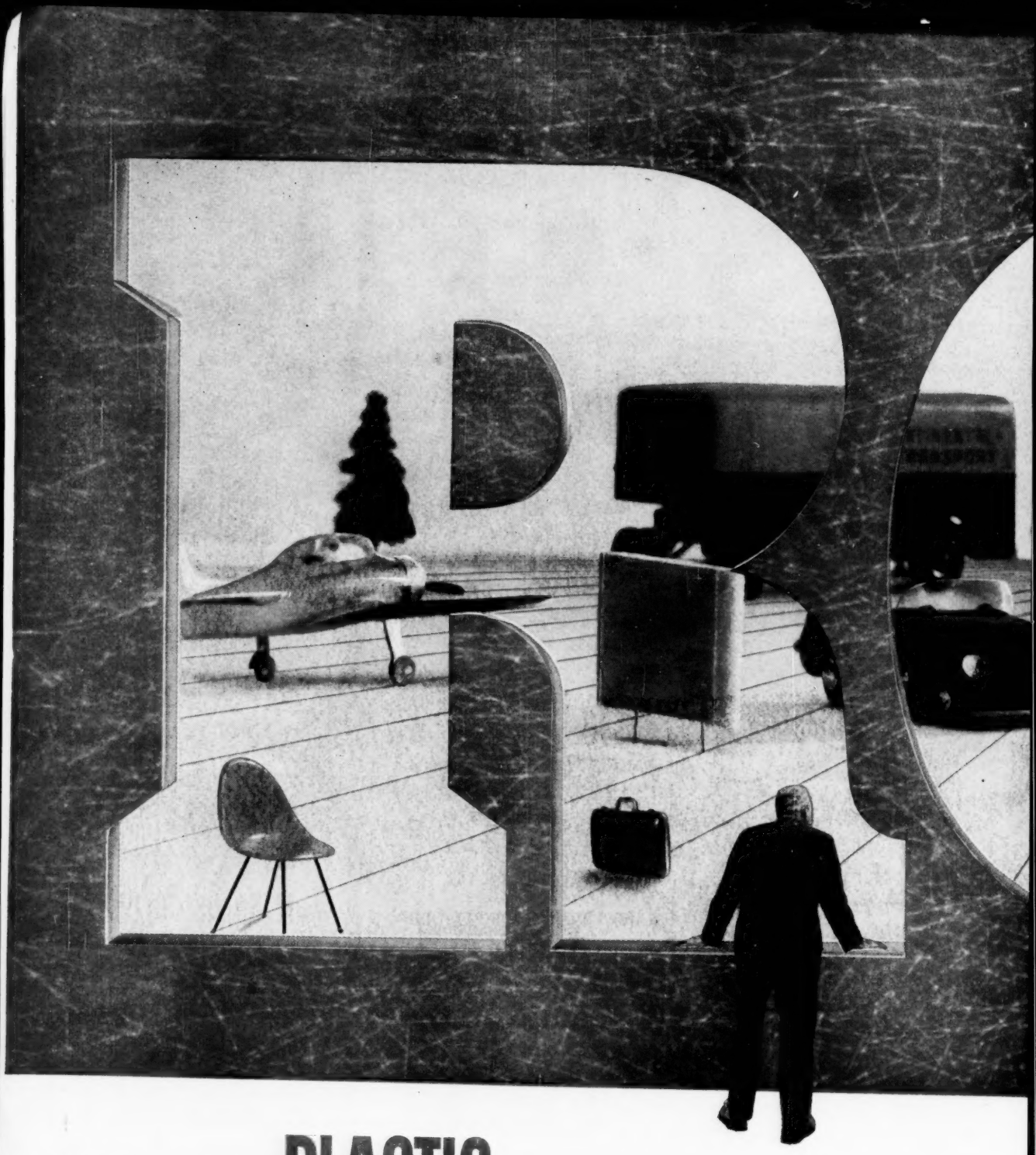

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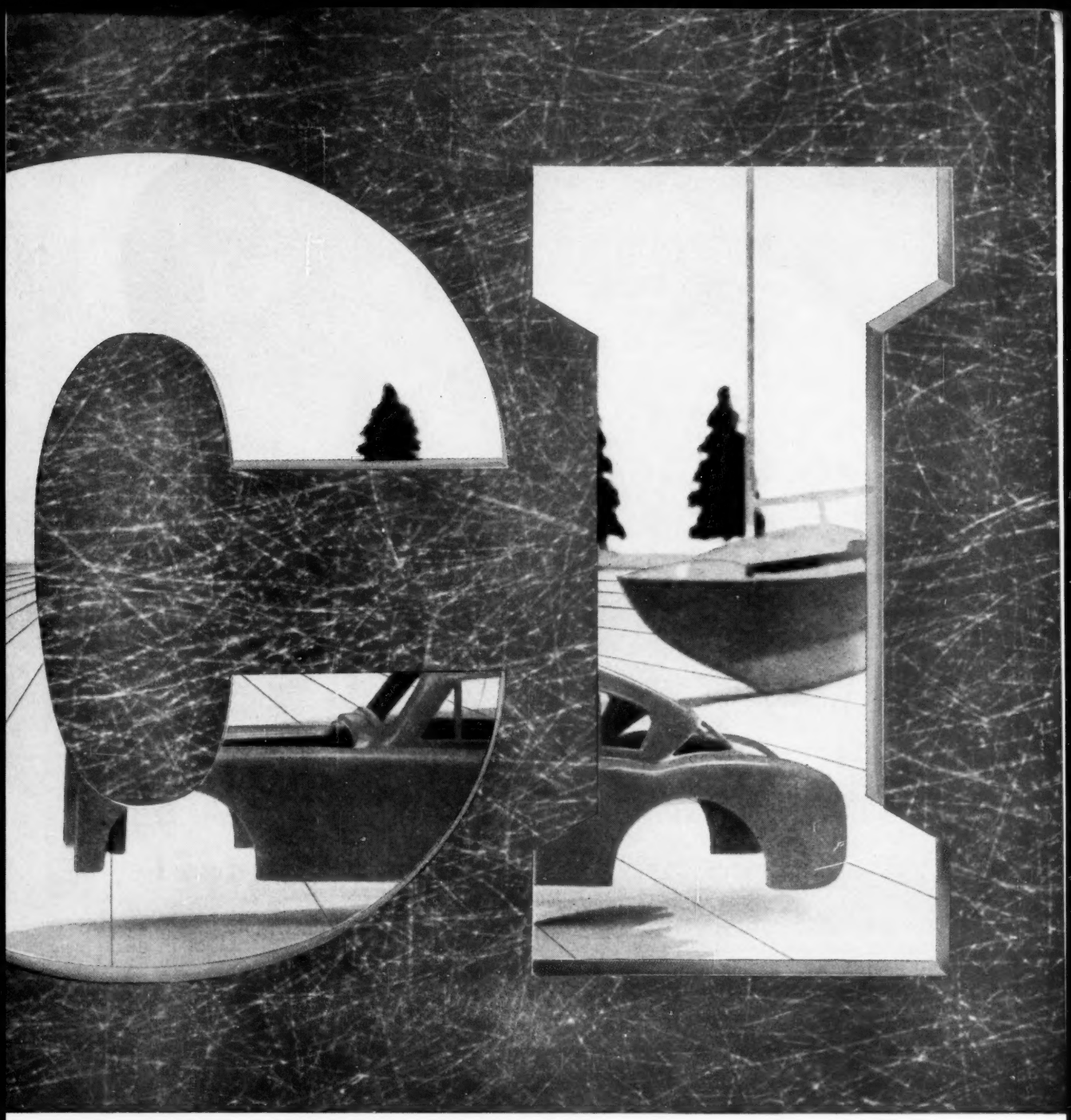

Research and development projects continue to improve the properties of plastics. One profitable result of this *creative chemistry* is new applications. Another is increased soundness in older applications.

Reichhold, one of the world's leading producers of synthetic resins, works closely with the manufacturers of plastic products. This cooperation results in RCI Polyester, Phenolic, Melamine and Epoxy resins that are tailor-made for customer needs.

If you have a problem involving these resins, write RCI for help in solving it. And remember that, in addition to synthetic resins, RCI supplies basic materials for their manufacture – such as high quality phenol, formaldehyde, maleic and phthalic anhydride.

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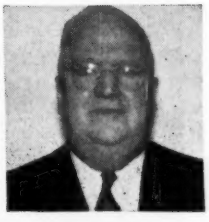

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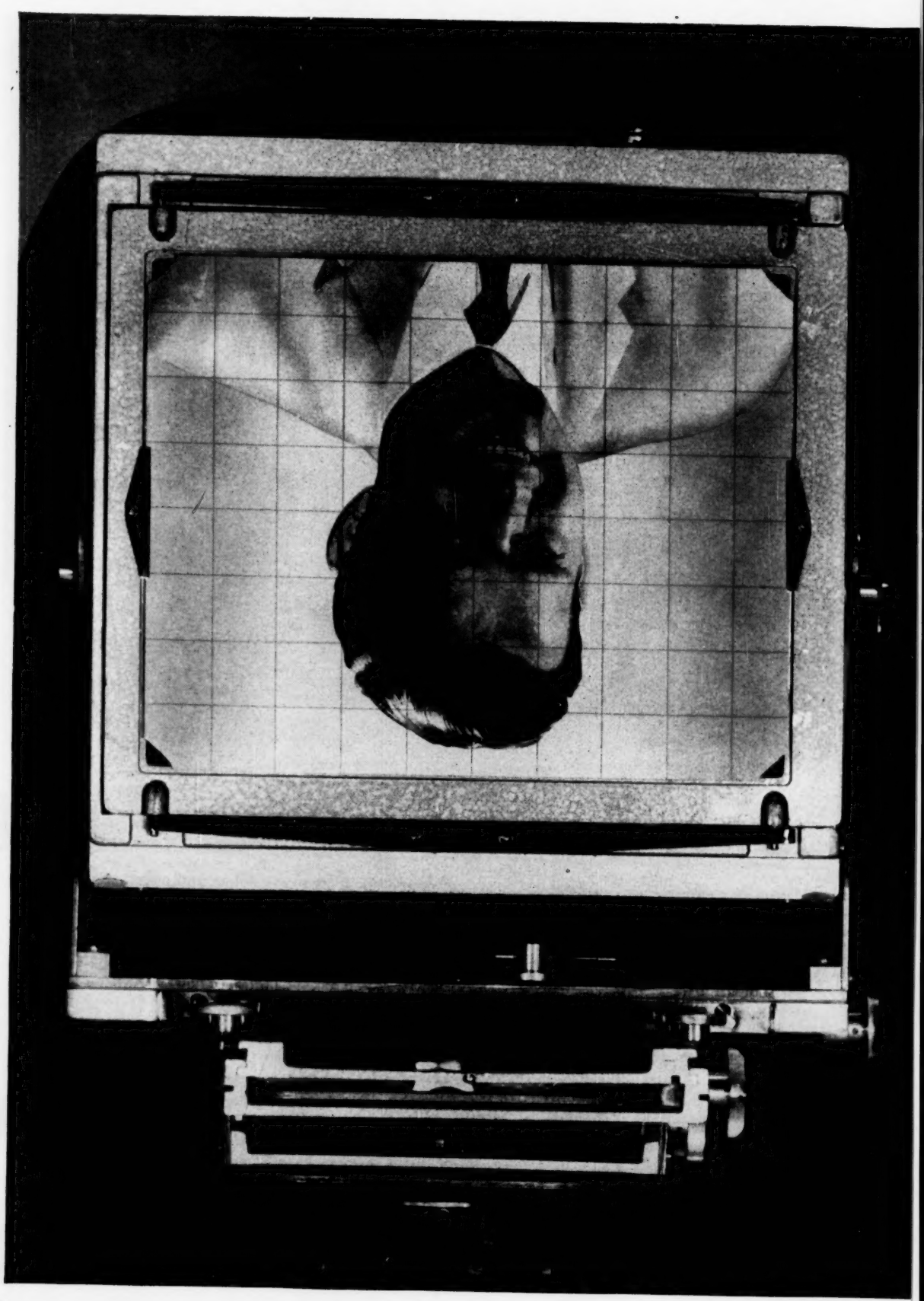

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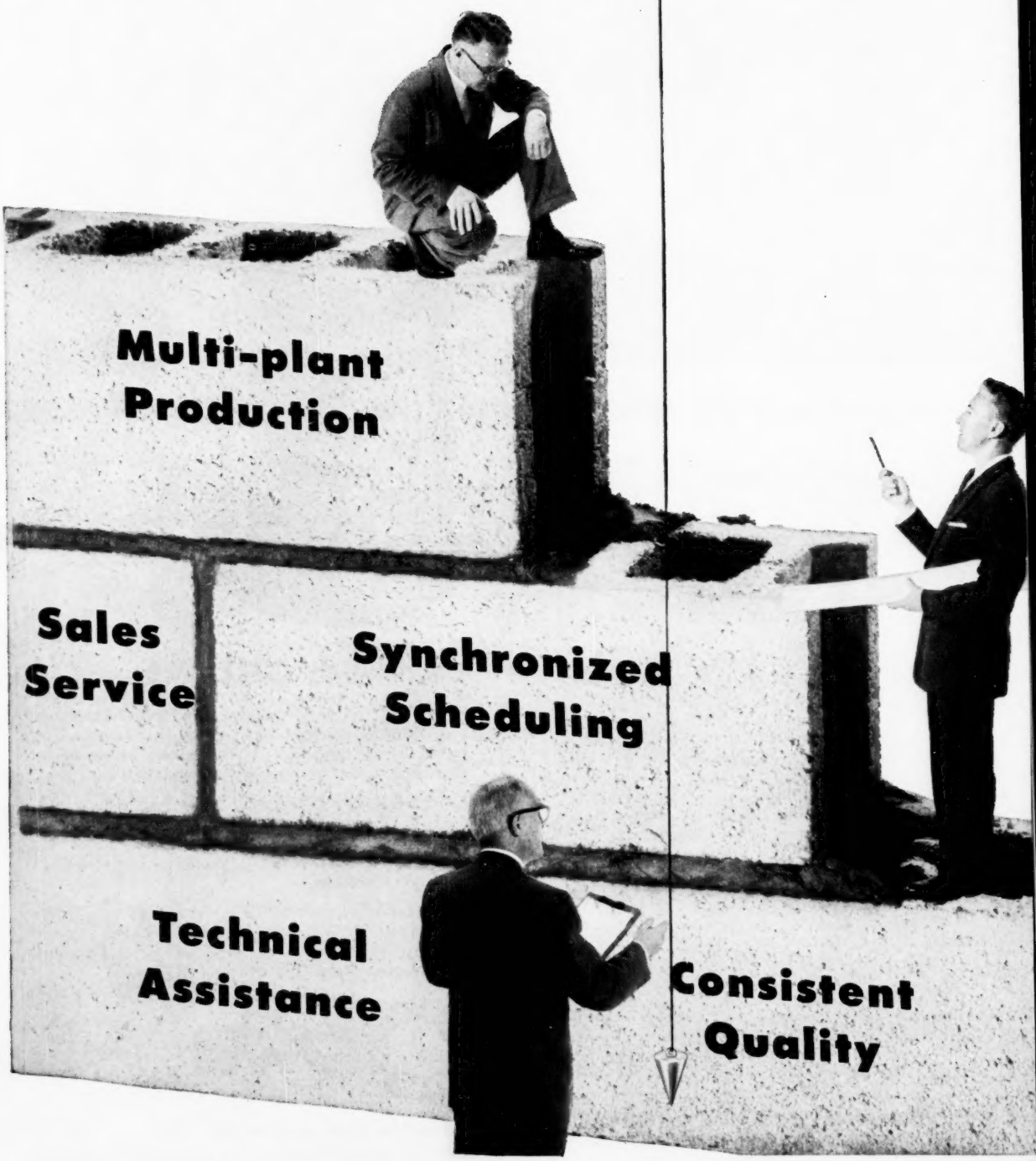

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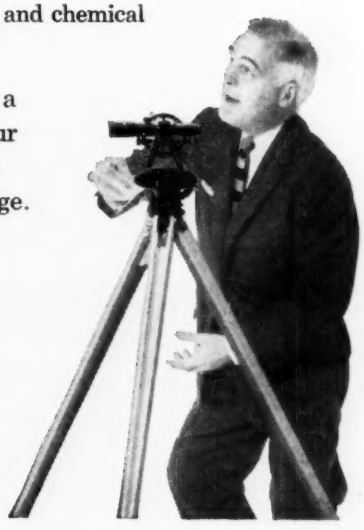

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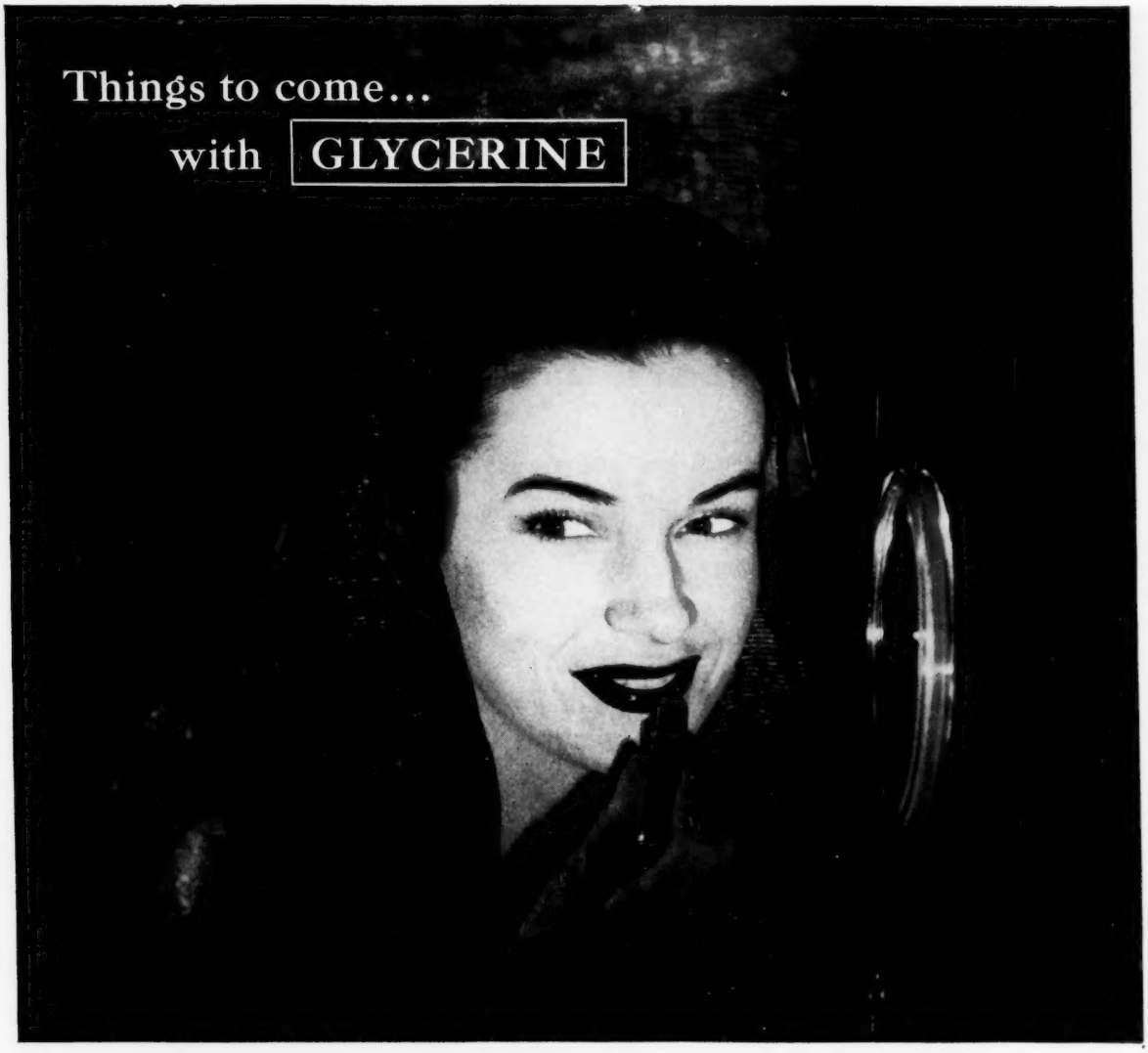

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New "super-pressure" steam unit requires ultra-pure water

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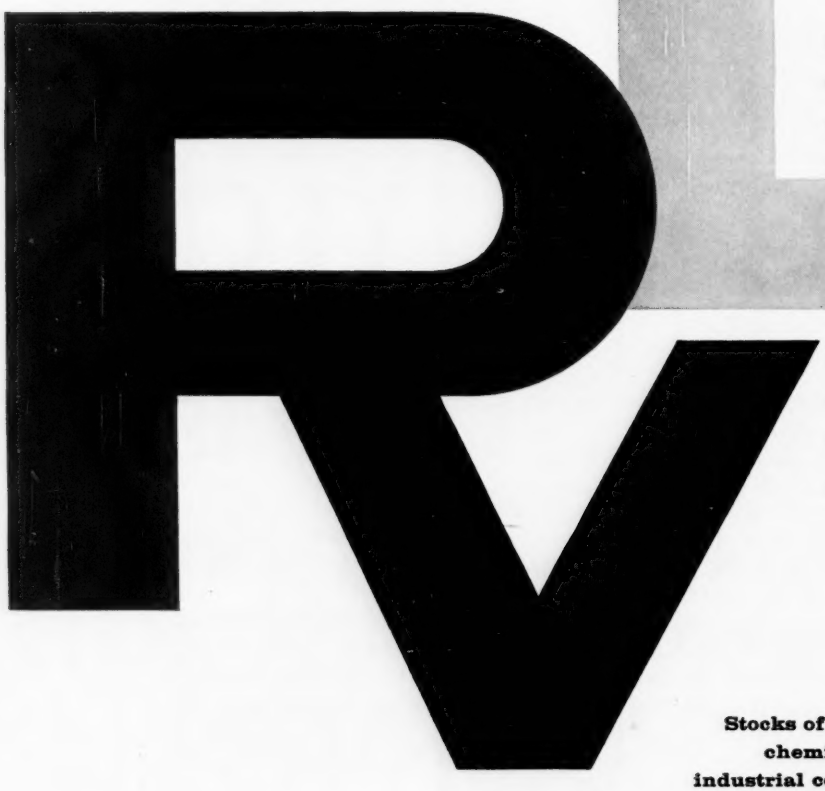

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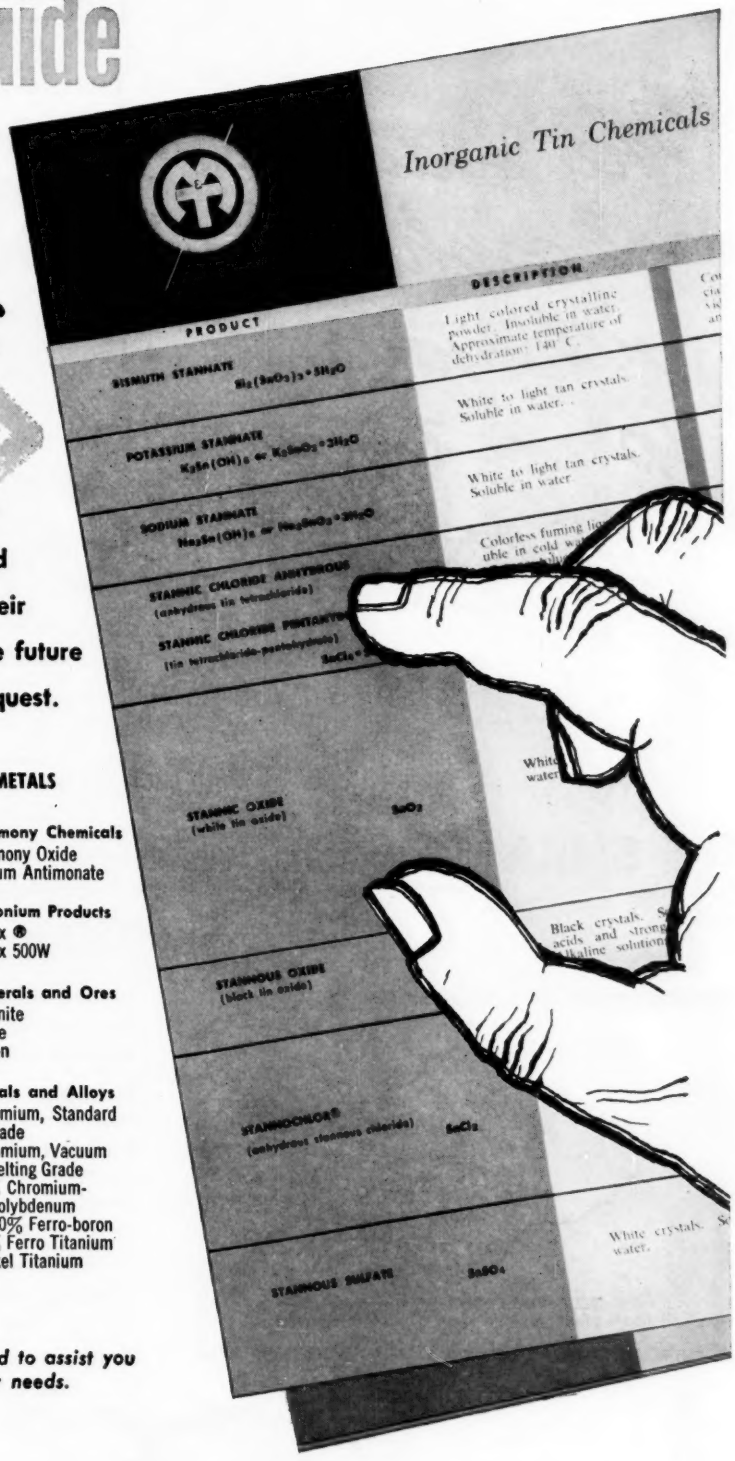

Metal & Thermit's new catalog C-57 places at your finger-tips a diversified list of M & T chemicals, indicating their present uses and suggesting possible future uses. A free copy is available on request.

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Chromium, Standard Grade
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Our technical service department will be glad to assist you in applying M & T chemicals for your needs.

TIN & TIN CHEMICALS
CERAMIC MATERIALS
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GENERAL OFFICES: RAHWAY, NEW JERSEY

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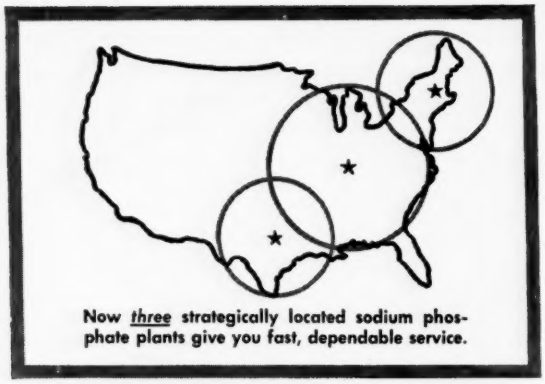
The sodium phosphate with your spray tower "built-in"!

SHEA Low Bulk Density SODIUM PHOSPHATES



Now *three* strategically located sodium phosphate plants give you fast, dependable service.

If you want to manufacture a light, fluffy product, Shea *low-bulk density* sodium phosphates can help you achieve it without spray drying.

Three years ago, Shea pioneered the production of spray-dried sodium phosphates — light, air-filled beads that occupy 60% more space than the same weight of conventional granules. Today Shea offers sodium phosphate users their choice — *either high density* (57-60 lbs. per cu. ft.) or *low-bulk density* (34-36 lbs. per cu. ft.).

If you use sodium phosphates — both high and low bulk density — count on Shea for products of unquestioned quality . . . in unfailing supply.

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Dicalcium Phosphate
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Organo Phosphorus Compounds
Elemental Phosphorus

SHEA CHEMICAL CORPORATION

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Jeffersonville, Indiana
Phone: BUtler 2-1381

EXECUTIVE OFFICE:
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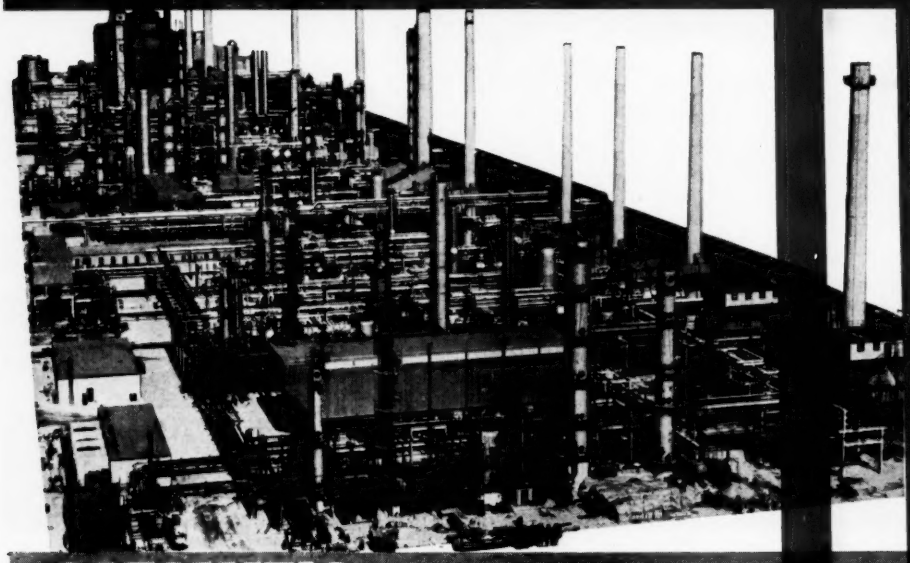
New York 16, New York
Phone: OXford 7-4553

TIDEWATER—builds for the future

Tidewater Oil Company's new refinery near Wilmington, Delaware, is the largest refinery ever built as a single project. It has a total capacity of 130,000 barrels per day. Its crude unit, Orthoflow fluid catalytic cracking unit, fluid coker and 45,000 BPD Houdriformer are the largest units of their kind ever built. Supplementary facilities are in scale with the vast productive capacity of this "Refinery of the Future."



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Catalytic's record in maintenance of refineries and other industrial plants has won it the maintenance contract for this gigantic new Tidewater enterprise. It assures Tidewater Oil Company of professional engineering type service that works in coordination with Tidewater's own staff. It means a minimum, highly productive, flexible force on the job only as required . . . with qualified mechanics available for turn-around periods.

Catalytic's contract maintenance service means more profits and less operating expense. Write for information on Catalytic Contract Maintenance.

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Catalytic *On-Time*... *On-Budget* Services
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Plan with Petro now ... for products you'll need in 1960

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Modern production facilities and unique polymer know-how are backed by the services of an extensive research organization operated by Petro's parent company, National Distillers and Chemical Corporation, at Cincinnati, Ohio.

Petro chemists and engineers are ready to work with you on the products you'll need in the years ahead. One example of recent progress is the new high-density polyethylene shown in laboratory production above.

Why not take advantage of the unique facilities that Petro offers?

NATIONAL PETRO-CHEMICALS

CORPORATION

A joint enterprise of National Distillers and Chemical Corporation and Panhandle Eastern Pipeline Company

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Chemico's engineering and construction accomplishments have always been a matter of public record. In presenting some of the highlights of that record at this time, we are simply restating the reasons for Chemico's pre-eminence in the design and construction of chemical and petrochemical plants. No other single chemical engineering firm has had such broad experience and so outstanding a record in so many fields.

Chemico designed plants and equipment, producing a wide range of agricultural and industrial products, are operating profitably in forty-three states, and in virtually every industrialized country on earth.

Consult Chemico the next time you consider the expansion, development or diversification of your production facilities.

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CHEMICAL CONSTRUCTION CORPORATION

A SUBSIDIARY OF ELECTRIC BOND AND SHARE COMPANY

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"Another product safely shipped in Inland 'protection-eered' containers"*

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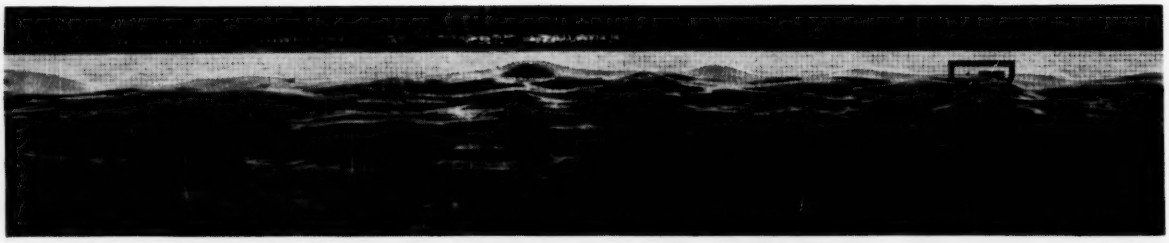

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**the right container, with the right lining for your product*

INLAND STEEL CONTAINER COMPANY

Division of Inland Steel Company • 6532 South Menard Avenue • Chicago 38, Illinois • Plants: Chicago, Jersey City, New Orleans, Cleveland and Greenville, Ohio

Full line of steel and stainless steel shipping containers, including galvanized and heavy duty ICC drums.

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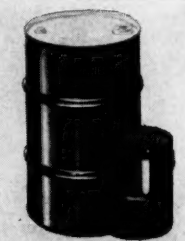

"It's Better to Ship in Steel"

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"Ed, what did you do about that contamination problem in the drums on the new line?"

"We purchased J&L containers with a new treatment of the steel surface recommended by their representative. The problem's solved—they certainly talk our language."

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- J&L steel containers provide engineered packaging for dependable transportation and safe storage.
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- Prompt dependable delivery from nine plants.

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Jones & Laughlin

...a great name in steel

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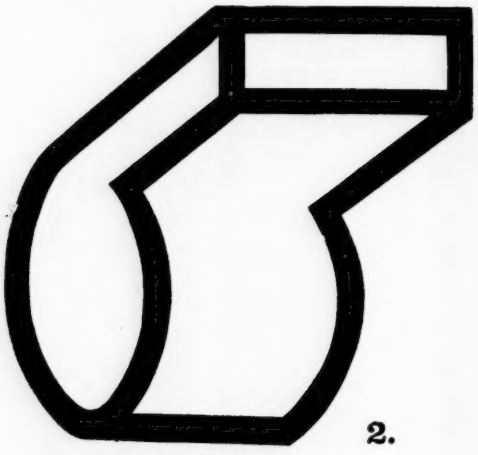

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1. How to make a lollipop lick better? In candy, soft drinks, sherbets, nothing mirrors true fruit tanginess as faithfully as Pfizer Citric Acid.

2. How to keep metals as clean as a whistle? Men who make outstanding household metal cleaners find that Pfizer Tartaric Acid is a highly efficient, safely nontoxic tarnish remover.

If you have a problem which might be solved by a high quality organic chemical, think of Pfizer first. Contact Dept. WP, Chas. Pfizer & Co., Inc., Chemical Sales Division, 630 Flushing Ave., Brooklyn 6, N. Y.

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. . . sells more than 100 organic chemicals for food, medicinal and industrial uses.

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DISINFECTANTS, CLEANERS, LUBRICATING ADDITIVES, INSECTICIDES, DETERGENTS, POLISH, WAX AND HUNDREDS OF OTHER SPECIALTIES !

Use it to give new sales life to an old product . . . or to get a new one off with a big head start!

It's another "first" from Canco—a can with a completely dripless nozzle. It pours freely, instantly, yet it won't drip a drop when the can is righted. But that's not all!

This new can takes full decoration all the way around *and on the top*, thanks to Canco's special side-seam and top construction. It's quick, easy, and economical to fill . . . it's lighter, handier, unbreakable, too. In short, it's packed with features that you, your dealers, and your customers will like.

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Are you **MANUFACTURING DETERGENTS** for these Industries?


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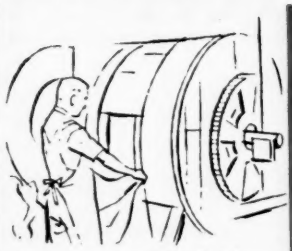
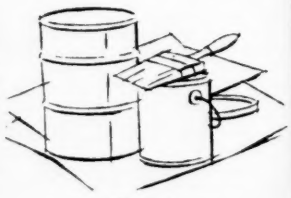
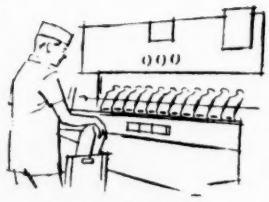

Dyeing and Finishing


Paint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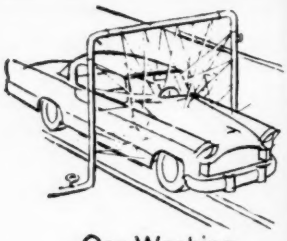
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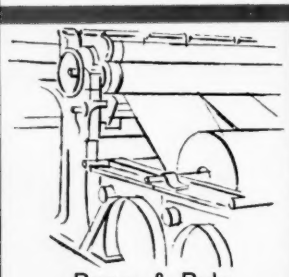
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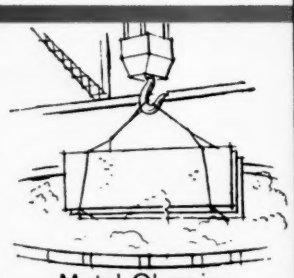
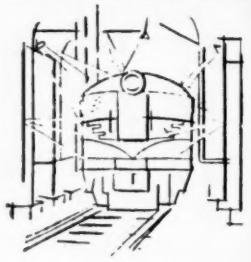
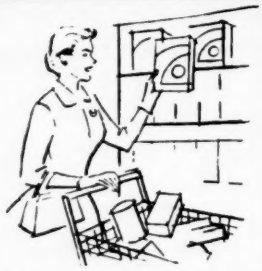

Metal Cleaning


Dairy


Railroad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NEOLENE 400

the basic raw material used by foremost detergent processors!

Also consider this Conoco Petrochemical for compounding industrial detergents—

Conoco Sulfonic Acid 400—an intermediate suitable for the manufacture of alkyl aryl sulfonate detergents. It is readily neutralized and lends itself to the production of a variety of highly satisfactory finished detergents. Available in tank cars, tank trucks and drums.

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Business Newsletter

CHEMICAL WEEK
November 30, 1957

Monday evening's first brief report of the President's illness triggered thoughtful exchanges among chemical management men arriving in New York for the Manufacturing Chemists' Assn.'s winter meeting. Conjecture about possible effects of another major layup dealt with subjects ranging from the missile program to anti-recession measures. But little could be said with assurance. Because of the cryptic tone of the White House bulletin, the MCA—and the nation at large—could only guess about the seriousness of the President's ailment—or whether he was really ill at all.

How to put across the chemical industry's viewpoint came in for plenty of attention on the formal scheduled agenda. One of six panels crammed into the one-day program, the discussion underscored the basic theme of the winter meeting: a critical examination of some of the chemical industry's problems and procedures.

As Vick Chemical's Thomas Wolfe pointed out, unions spend about 35% of their income on communications activities (public relations, plant newspapers, advertising, etc.)—companies, on the other hand, spend half of one percent of their payroll for these functions.

One result of this disparity, General Electric's John McCarty said, is that the same public that accepts industry's products, goods and services has yet to be convinced that industry deserves the understanding and support of employees and community neighbors. Consequently, the four basic dimensions of business (designing, manufacturing, accounting and selling) have been jeopardized.

One area of jeopardy is legislation—at both state and federal levels—according to MCA's counsel Claude Hobbs. Hobbs was particularly concerned over opposition from unions to industry-sponsored bills to insure the safety of chemicals in food, pointing out that some union-proposed legislation would virtually throttle the development of new chemical products for improving the nation's food supply.

More on a company level than on an industry level were the remarks of Pitney-Bowes, Inc.'s Frederick Bowes, Jr. Bowes puts his faith in concentrated community relations to keep a company on good terms with employees and with the community.

Other subjects of panel discussions were reactive metals, plant safety, the economic climate, chemical advertising, and management of new products.

•

First trial of damage suits involving Cutter Labs' Salk vaccine is getting under way in Oakland, Calif., at Alameda County superior court. A jury was sworn in last week on a test case, which will probably influence the outcome of 43 other suits pending against Cutter. The suit, involving two children who contracted paralytic polio after receiving Cutter vaccine,

asks $365,000 damages. Arguing against Melvin M. Melli, noted criminal lawyer who is representing the two children, Cutter will contend that the vaccine was manufactured according to government safety standards.

•

Strong confidence in the pulp and paper industry was voiced last week by Crown Zellerbach President A. B. Layton. Layton told San Francisco financial experts he believes reports of overexpansion of productive capacity "have been greatly exaggerated . . . new capacity . . . actually is much less than that suggested by information released earlier." Though profit for the industry won't be spectacular in the next few years, he figures that, as capacity of new or soon-to-be-operating plants is absorbed, the profit picture will brighten.

CZ—whose nine-months earnings were off 23% (down to $8.5 million) in spite of 2% higher sales—is going ahead with plans to spend some $50-55 million to complete its already-started expansions.

•

Processors of edible fats and oils are mounting an industry-wide campaign to counter publicity linking their products with heart disease. A special, seven-man committee, formed last spring, is quietly canvassing the industry to line up support for a nationwide public relations drive to spread the facts and combat "misconceptions" on the controversial issue. The committee seeks $300,000 by year's end to implement its program.

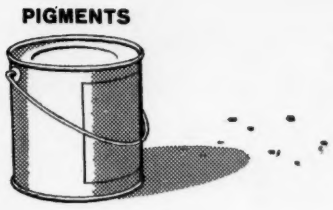
Processors face a major problem if housewives are being convinced—by one-sided presentation of arguments over medical risks of food fats—that they are feeding potentially hazardous products to their families. Housewives might stampede companies into changing product formulas, or face heavy sales losses.

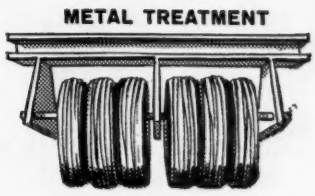
Scientific arguments center around the disputed finding that certain fats (mainly the "soft" liquid fats) are less likely to cause heart disease than others (chiefly "hard" solid fats). Industry spokesmen insist they will make any changes in processing methods sought by a preponderance of informed medical opinion—but they feel such a preponderance of opinion is now lacking.

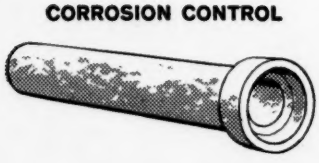
Procter & Gamble, Lever Brothers and Swift & Co. are among the most active promoters of the public relations campaign, and the committee membership includes officials of the American Dairy Council, The American Meat Institute, and the Institute of Shortening and Edible Oils.

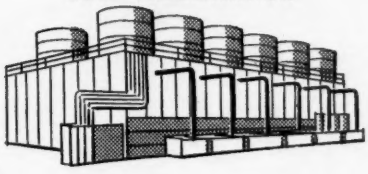
•

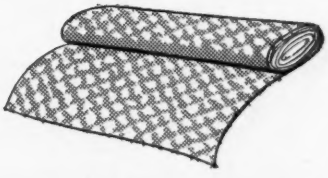
It's bauxite that's luring Kaiser to Panama. Kaiser Aluminum & Chemical has obtained an exploration and mining concession from the government of Panama for a large section in the Western part of that country, near the Costa Rican border. "We're very optimistic about the prospects," says Kaiser Vice-President D. A. Rhodes. "Our preliminary studies indicate the deposits are extensive."











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$Na_2Cr_2O_7 \cdot 2H_2O$ (Min.)	99.8%	69.0-69.2%	99.9%
Chloride as Cl (Max.)	0.06%	0.3%	0.005%
Sulfate as SO_4 (Max.)	0.2%	0.4%	0.007%
Vanadium as V (Max.)	0.005%	0.02%	0.002%

PROPERTIES	
Crystal system	monoclinic, sphenoidal
Stability in air	deliquesces in humid air
Behavior on heating	changes to anhydrous (anhydrous salt melts @ 356.7°C, starts to decompose around 400°C)
Density	2.348 @ 25°C
Heat of solution	minus 28.2 cal/gram
Transition in solution	84.6°C to anhydrous
Eutectic with water	minus 48.2°C
Eutectic composition	69.0% $Na_2Cr_2O_7 \cdot 2H_2O$
Bulk weight	96 lb/cu ft

However you apply the properties of this chemical of many uses, Mutual Sodium Bichromate is available in forms, grades and packages to meet your requirements. It is produced in both technical and reagent grades, the former in both granular and solution form. Technical solution is shipped in tank cars and tank trucks. Technical granular is packaged in 100-lb. net paper bags, 400-lb. net fiber drums and both 100 and 400-lb. net steel drums; reagent granular, both 100-lb. net and 400-lb. net steel drums.

Buyers of Mutual brand, in addition to being guaranteed highest quality, are assured of expert technical assistance and within 24-hour shipping service when needed.

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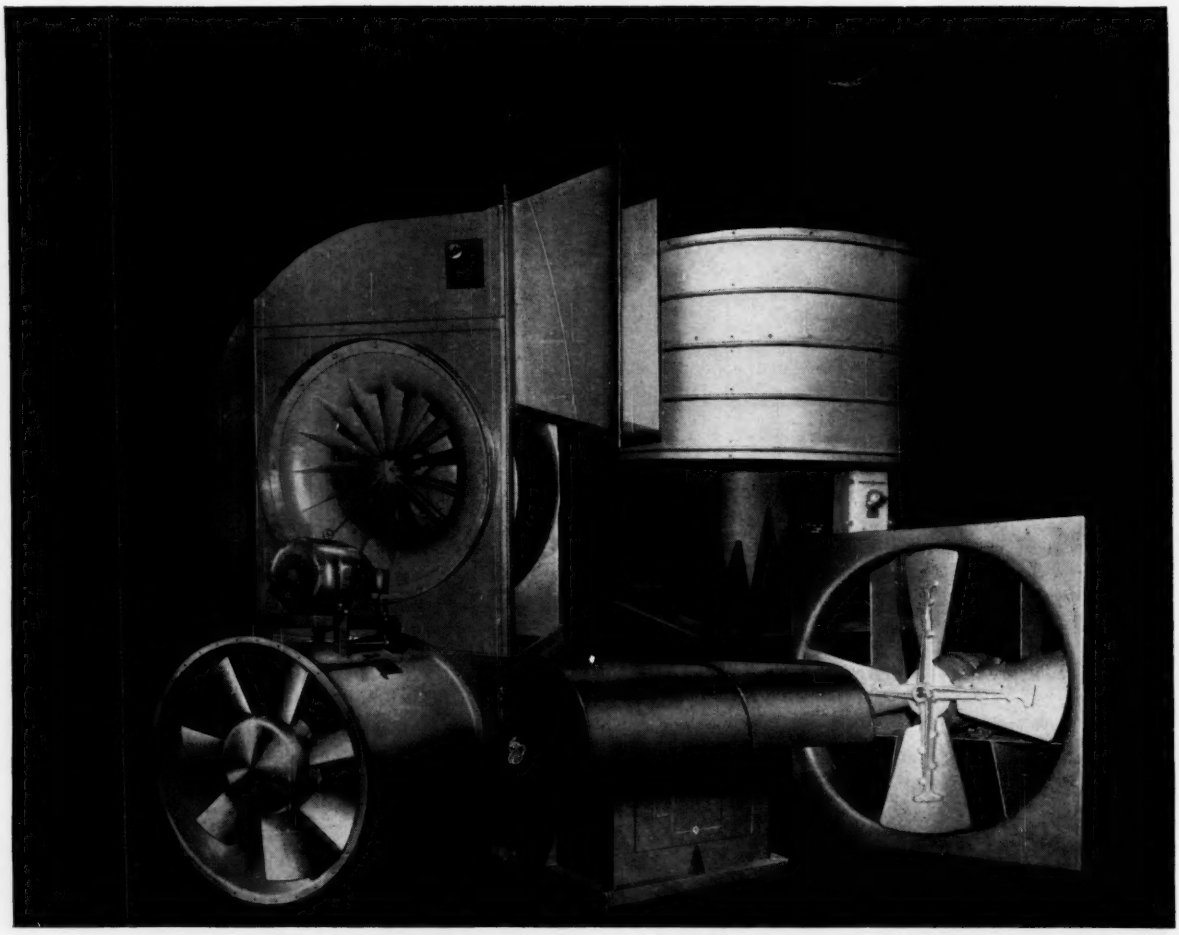


FAN'fare *n. a flourish of trumpets* ...Webster

It takes more than fanfare to sell fans for today's specialized industrial requirements — it requires the most complete line possible, with full selection of fan types, sizes, rotors and drive arrangements. Today, there's no such thing as a "general-purpose" fan.

"Buffalo" offers you this complete selection in propeller, axial flow and centrifugal fans. For instance, for large ventilation systems, you have a choice of type BL Fans for highest efficiency in Class I; and the new type BLH for peak performance on high pressure work. For mechanical draft and other heavy industrial work, you can select radial, airfoil, backward curve or forward curve fans to match your requirements exactly. "Buffalo" Propeller Fans are built in 8″ to 144″ sizes to deliver up to 250,000 cfm — also available as package roof ventilators in many sizes. You can order rubber-lined exhausters, stainless steel fans, high-temperature fans, low-temperature fans, non-sparking and many others.

And beyond this, "Buffalo" engineering, testing and manufacturing facilities — working constantly *without* fanfare — are ready to work out the most specialized and difficult air problem you may have. Write for recommendations today!

BUFFALO FORGE COMPANY

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo"

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING FORCED DRAFT COOLING HEATING PRESSURE BLOWING

Chemical Week

November 30, 1957

In joint CMRA-CCDA meeting at Houston last week, industry experts foresee . . .

Galloping Future for Gulf Coast Chemicals

Sighting eight years into the future from various commodity viewpoints, industry experts speaking at Houston late last week foresaw as a strong possibility that the Texas-Louisiana Gulf Coast area may be the nation's No. 1 chemical production center by 1965.

To the more than 300 chemical-company delegates attending the joint two-day meeting of Chemical Market Research Assn. and Commercial Chemical Development Assn. in the millionaire-frequented Shamrock Hilton Hotel, specialists from leading oil and chemical concerns presented a vigorously optimistic prediction that the Brownsville-to-New Orleans area is due to play a particularly eminent role in producing chemicals from natural gas, refinery by-products, salt, sulfur, and sea water minerals (*table, p. 40*).

Stage-setter: Noting that a recent report by the Manufacturing Chemists' Assn. places Texas and Louisiana first and second, respectively, among the 48 states in number of chemical

Forecasts from Houston: No Slackening in Upsurge

Commodity	Current Level	Predicted for 1965	Expected Increase
INORGANIC CHEMICALS			
Total salt production—U.S. (tons)	25 billion	32-45 billion	60%
" " " — Gulf Coast	8 billion	16-24 billion	150%
Salt usage in chemical manufacturing — Gulf Coast	6 billion	12 billion	100%
Chlorine production — U.S. (tons)	4 million	7-10 million	100%
Chlorine capacity — Gulf Coast	2 million	5-7 million	200%
Caustic soda production — U.S. (tons)	4 million	6-8 million	75%
Caustic soda capacity — Gulf Coast	2.1 million	4-5 million	100%
Soda ash production — U.S. (tons)	5.6 million	6-8 million	25%
Soda ash capacity — Gulf Coast	1.1 million	1.6 million	45%
Elemental sulfur consumption — Gulf Coast (long tons)			
For sulfuric acid	560,000	740,000	32%
For pulp and paper	20,000	25,000	25%
As ground, roll, and stick sulfur	45,000	50,000	11%
For chemicals and miscellaneous uses	25,000	35,000	40%
Total Gulf Coast sulfur usage	650,000	850,000	31%
ORGANIC CHEMICALS			
Ethylene consumption — U.S. (lbs.)	3.6 billion	6.5 billion	81%
Ethylene consumption — Gulf Coast	2.2 billion	3.6 billion	64%
Propylene consumption — U.S. (lbs.)	1.5 billion	2.0 billion	33%
Maximum availability of petrochemical raw materials for chemical manufacturing in the Gulf Coast area in 1965:			
By-product hydrogen	465 million cu.ft./day		
Aromatics	1.5 billion gal./year		
Butylene	5.6 billion lbs./year		
Propylene	3.8 billion lbs./year		
Ethylene	12.5 billion lbs./year		

In Aromatics, a Giant Role for the Gulf Coast

(Predictions for 1965, in million gallons)

Commodity	Gulf Coast Production	U. S. Demand
Benzene	200	500
Toluene	155	335
C_8 aromatics	150	300
o-Xylene	7-10	17.5

Gulf Coast's 1965 Outlook on Synthetic Rubber

Gulf Coast production as percent of U. S. total:	
GR-S rubber	60%
N-type rubbers	30%
Butyl rubber	100%
Neoprene	(none)
Gulf Coast requirements for 1965 rubber production (long tons):	
Butadiene	450,000
Styrene	180,000
iso-Butylene	165,000
Isoprene	5,000
Acrylonitrile	4,000

industry projects completed, under construction or planned, stage-setter John McPherson—vice-president of Jefferson Chemical Co. and co-chairman of the meeting—said it's possible that the value of chemical production in the Gulf Coast area is even now about to exceed that of the combined New York-New Jersey area.

After reciting the area's natural resources and other economic assets, President Harold Vagtborg of Southwest Research Institute (San Antonio) called upon the U.S. chemical industry to study increased use of agricultural products as raw materials.

Sulfur Use Soaring: Anticipating that many sulfur users will seek additional quantities of elemental material in preference to other forms, Jefferson Lake Sulphur Co. President E. H. Walet, Jr., predicted that world consumption of elemental sulfur in 1965 will reach 15 million long tons, nearly double '56's 7.7 million.

Walet scored the recent sulfur price reductions, emphatically declared that "higher prices are not only justified but are necessary to maintain and develop a sound sulfur industry."

Salt and Sea Water: The capital investment of that portion of the Gulf Coast's chemical industry that's based on salt and sea water appears to be "in the neighborhood of $800 million to $1 billion." That was the rough estimate tossed out by Dow Chemical's H. G. Roebke, assistant general manager of the company's Texas Division.

On the whole, Roebke looked for an increasingly profitable future for the Gulf Coast's brine and sea water processors. But the rate of expansion —exceptionally high since the first of the 14 plants now operating or abuilding started up back in 1934—will drop, Roebke believes, if construction and operating costs keep mounting.

Petroleum Preview: John McLean, vice-president of Continental Oil Co., had the assignment of forecasting the size and nature of the Gulf Coast petroleum industry in 1965—and he seemed to relish the chore. Speaking slowly and deliberately, McLean predicted that total U.S. demand for petroleum products will rise by about 3.7%/year to about 12.1 million bbls./day— some 36% more than the estimated daily average for '57.

Natural gas consumption in the U.S. will climb by about 4.5%/year, he estimated, bringing marketed production to about 15.2 trillion cu. ft. in 1965—about 42% above this year's level. McLean said the Gulf Coast has contributed 23.5% of total U.S. production of liquefied petroleum gases in recent years. Should the same ratio continue, he proceeded, there will be a little more than 2.4 billion gal./year of LPG production in the Gulf area in 1965, compared with the 1.95 billion gal. available this year.

Higher Costs on Hydrocarbons: The need for petrochemical raw materials will continue to rise in the next eight years, but the petroleum industry has the potential to meet those demands. This was the assurance of General Manager Wayne Kuhn of The Texas Co.'s Research & Technical Dept., Beacon Laboratories. Accordingly, he continued, no shortage of natural gas for chemical manufacture is anticipated, but price of the material is expected to keep on its upward trend. Seeing that the current cost is about 10¢/1,000 cu. ft. compared with the 6¢ charged in 1950, he deduces that "cheaper sources of raw material will be sought for petrochemicals."

Kuhn analyzed the effects that changing refinery operations—mostly aimed at providing higher-octane fuels —will have on availability of by-products that serve as petrochemical raw materials. For example, he sees increasing use of extraction by Udex, Arosorb or by use of sulfur dioxide as resulting in greater output of normal paraffins that should be good starting points for petrochemicals.

Panel Panorama: Rounding out the technical sessions was a panel discussion on hydrocarbon requirements for chemical manufacture, moderated by industrial chemicals consultant J. R. Mares of Houston. Their forecasts are summarized in the tables on page 40—hydrogen and aromatics by R. F. Pfennig of Humble Oil Co.; ethylene by Kendall Greene of Gulf Oil Corp.; propylene and butylenes by Shell Chemical Co.'s H. A. Mitchell; and synthetic rubbers and intermediates by Enjay Co.'s Vice-President James Park.

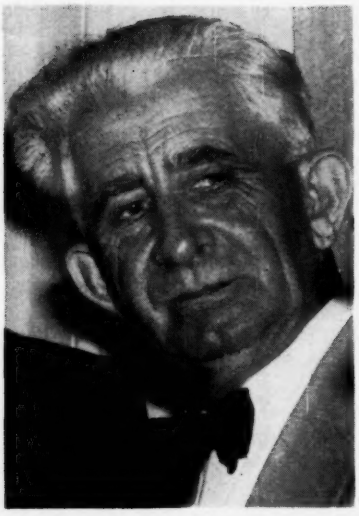
At the Western-style barbeque hosted by Dow that evening at its Lake Jackson pavilion some 55 miles from Houston, consensus among delegates was that the speakers' unanimous vote of confidence in the Gulf Coast's chemical future was amply supported by the data they had mustered for the occasion.

Digressions: Research, Pollution

Two speakers at last week's Houston meeting departed from the industry forecast theme to sound off on topics of no less concern to chemical process management.

Southwest Research Institute's Vagtborg read into the record a charge that "The U. S. has suffered its first serious setback—a setback in the vital area of scientific leadership," caused by failure to give adequate support to basic research. In a joint statement, Vagtborg and six other industrialists and educators called for broader financing of research costs, graduation of increasing numbers of scientists, and creation of an atmosphere "conducive to the advancement of science."

General Manager Kenneth Danskin, of Lubrizol Corp.'s Houston plant and co-chairman of the meeting, blasted Harris County's pollution control agency for its enforcement methods. Instead of the "fair-minded, cooperative spirit" that he says prevails in most operations of this kind, the local agency, he went on, has harassed industry with criminal and civil lawsuits that sometimes seem to be filed without sufficient evidence. Danskin declared that "If the hand of friendship and cooperation should be extended, an enlightened and responsible industry will react with astonishing quickness to show that one of its primary concerns is protection of the air and water in the community."



WIDE WORLD PHOTOS

Durham (left), Moody: 'Will atomic power be competitive?'

Reaction to Reactors

Late in December or early in January, the Shippingport, Pa., atomic reactor will start pouring power into the western Pennsylvania power grid. But its debut is being met with sharp criticism from both industry and government sources. This challenge to federal subsidies for atomic power—which will have to be faced in the next session of Congress—is giving chemical management new grounds for wariness about venturing into atomic-materials processing.

Most recent slash-the-subsidies attack came last week from Joseph E. Moody, president of the Southern Coal Producers Assn., a long-standing, outspoken A-power critic. He termed the Shippingport plant an "outstanding example of idiocy."

Moody's latest outburst is based on familiar data: Shippingport, according to Admiral H. G. Rickover, chief of the naval reactors branch of the Atomic Energy Commission and director of the project, will produce power at a cost of possibly 65 mills per kilowatt hour.

Duquesne Light Co., in partnership with AEC on the project, will buy the power for eight mills. The government will bear the additional cost, and this, says Moody, could run up to $24 million/year.

But reactor men point out that Moody's figure was arrived at by using all extraordinary costs connected with the reactor. Many expenses—such as research, feasibility tests, and molding nonstocked parts—won't recur if similar reactors are built later on, they say.

To indicate how much atomic power will cost under normal conditions, reactor men cite the abuilding Consolidated Edison (New York) reactor, due to start producing in 1960. Power from Con Ed's reactor will cost only 13 mills/kwh.—and it's likely that costs will get lower as operating and fuel reprocessing problems are solved. Atomic power costs are now substantially higher than power by conventional methods, which ranges from 4 to 8 mills/kwh.

Cost Turnabout: Some legislators have latched onto the high cost factor as support for their argument that the government should build large-scale atomic plants because private industry can't afford to take the loss. Rep. Carl Durham (D., N. C.), chairman of the Congressional Joint Committee on Atomic Energy, argues that this country must build such plants to keep pace with developments in Britain and Russia.

The Opposition: Coal interests—and some members of Congress—have fought this point of view on the grounds that it means federal subsidies for a competing fuel. Coal reserves, they claim, are such that this country won't need atomic power for many years. But they aren't opposed to a broad atomic research program.

New Division for UCC

Union Carbide Corp. has set up a new division to handle growing demands for unsaturated hydrocarbons.

Called Union Carbide Olefins Co., the new division will be an autonomous operation, distinct from Union Carbide Chemicals Co., which up to now has been handling production and sales of all chemicals, including olefins.

In effect, however, the change is more organizational than physical. No new plants will be built, materials will come from existing plants operated by Union Carbide Chemicals Co. But the new company will take over the production, sales, purchasing and engineering operations connected with ethylene, propylene, butadiene and analogous hydrocarbons.

Carbide points out that olefins have been a major part of the company's business since 1920, when Carbide started producing them at Clendenin, W. Va.

As president of the new firm, Carbide named H. D. "Sox" Kinsey, longtime engineer-employee who started his career at the Clendenin plant.

Tax Ruling Awaited

Before year-end, the U.S. Internal Revenue Bureau is likely to come out with a tax ruling that may be of considerable moment to business in general and to the Du Pont company and stockholders in particular.

Late last week in Chicago, following a hearing on the Supreme Court-ordered redistribution of Du Pont's 63-million-share holdings in General Motors Corp., Federal District Judge Walter La Buy approved a motion filed by Du Pont and GM attorneys that the Revenue Bureau be asked to decide on tax liabilities under the stock disposal plan recently proposed by the Justice Dept.

That plan suggests that Du Pont's GM shares be placed in trust, with some to be distributed to Du Pont stockholders and the remainder to be sold over a 10-year period. Proceeds would go to Du Pont stockholders.

Du Pont and GM want to know if those payments would be treated as tax-free distributions, as dividends, or as payments in partial liquidation. Du Pont attorney Andrew Dallstream said about $1 billion in taxes is involved.

FOREIGN

Chemicals/Germany: While over-all chemical industry sales in West Germany increased 10-12% during 1956, Farbwerke Hoechst AG. (Frankfurt) reports a 16.6% rise to $353 million. Of that total, exports accounted for 30%, or $106.9 million. New capital investments—$57.6 million in '56—are expected to total more than $47 million for '57. Research expenditures rose from $16.4 million in '55 to $19.3 million in '56 —5.4% of sales. Since '52, the company's employment total has climbed from 26,189 to 39,615.

•

Chemicals/China: In Red China, the Communist party's Central Committee has severely criticized the country's chemical industry as "backward" and "lagging." The party's official newspaper says that last month's opening of the Russian-built, three-plant chemical complex at Kirin in northeast China was "only the first step" of the long march that the chemical industry there must take to meet "the growing demand of our national economy."

•

Fertilizer and Heavy Water/India: India's state-owned Nangal Fertilizer and Chemical Ltd. has contracted with the French chemical concern St. Gobain (Paris) to construct a $15-million fertilizer plant at Nangal in East Punjab, with "favorable deferred payment terms." Scheduled annual capacity by '60 is 395,000 tons of nitrogen- and lime-containing fertilizers. This plant, and an adjoining unit to make 12-15 tons/year of heavy water, will get water and electric power from the nearby Bhakra-Nangal river valley project.

EXPANSION

Plant Engineering: Chemical Construction Corp. (New York) has started construction of a new development center in New Brunswick, N.J. The unit will house Chemico's laboratories for bench and pilot-plant-scale testing, replacing the company's pilot-plant operations at Linden, N.J. It's scheduled for completion in June '58, when Linden employees will be transferred to New Brunswick.

•

Epoxy Resins: Construction of Ciba Co.'s new epoxy resins plant and laboratories in Toms River, N. J., is under way. Scheduled to be onstream in mid-'59, the new installation will replace the resins and plastics units of Ciba's plant at Kimberton, Pa.

•

Feldspar: Spar-Mica Corp. (Baie Johan Beetze, Que.) last week started exporting feldspar concentrate from its $4-million mining operation in the remote St. Lawrence Gulf community of Baie Johan Beetze, 700 miles northeast of Montreal. Reportedly, it was the first bulk shipment of feldspar from Canada.

Perlite: Great Lakes Carbon Corp.'s Mining and Mineral Products Division has started limited mining operations at its No Agua deposit of crude perlite in northern New Mexico. Ore will be processed at Great Lakes' Florence, Colo., plant until completion of a new crushing and sizing plant near the deposit in mid-'58.

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Plastics: Shell Chemical Corp., subsidiary of Shell Oil, is surveying a 200-acre site near Riverside, N.J., where it may build a multimillion-dollar plastics plant. The company is checking the site for suitability of producing synthetic resins and allied products.

•

Platinum: Miracle Mines, Ltd. (Denver), will start producing platinum from ores discovered near Walden, northwestern Colorado. Miracle estimates that the ore will bring $9-50/ton, and on this basis, company officials say, reserves are worth about $300 million.

COMPANIES

American Marietta Co. (Chicago) has agreed to purchase Niagara Pipe Ltd. (St. Catherines, Ont.) through an exchange of stock. The Chicago firm, besides taking over Niagara's concrete plant in the St. Lawrence Seaway development area, will build an additional plant in Toronto.

•

Merichem Co. (Houston), an affiliate of Jefferson Lake Sulphur Co., has purchased Brin Chemical Co. (West Tulsa, Okla.) for an undisclosed sum. A Merichem official said the company will develop the Brin plant into "a petrochemical manufacturing concern, which will operate throughout Oklahoma and Kansas." Present plans call for a tripling of Brin's cresylic acid output.

•

Air Products Inc. (Allentown, Pa.) has acquired all the assets of Kemsco, Inc. (Torrance, Calif.), through a cash transaction. Kemsco will continue to produce liquefied gas pumps and to research special low-temperature equipment, supplementing Air Products' present work in that field. The California firm will be operated as a wholly owned subsidiary of Air Products.

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H. K. Porter Co. (Pittsburgh) has purchased Bond Brothers Inc., which makes railroad ties and operates a large creosoting plant in Louisville, Ky., for $5 million. Bond Brothers will continue operating as a division of Porter.

•

Canadian Industries Ltd. is offering $20 million worth of 5¾% debentures through a syndicate headed by A. E. Ames & Co. Ltd. (Montreal). Proceeds from the sale will be used to retire a bank loan and to build new or expanded facilities at Edmonton, Hamilton, Copper Cliff and Beloeil.

Using Salt Efficiently

by **INTERNATIONAL SALT COMPANY, INC.**—America's largest producer of salt

How to Find the Strength of Salt Brines—Accurately

In most of today's plants, the type of hydrometer called a Salometer can generally be used to measure the strength of salt brines most accurately. This device (similar in principle to the hydrometer which checks the condition of your car's battery) is convenient to use—and its scale permits fast calculations for a variety of plant needs. The Salometer scale reads from 0° in pure water to 100° in saturated brine, with each degree representing a percentage of fully saturated brine.

Using the Salometer with maximum accuracy, however, isn't just a matter of reading the scale. A number of simple precautions must also be taken to make sure the Salometer records correct brine strength. Here they are:

1. Check the temperature of the brine. Since most Salometers are calibrated for reading at 60° F., brine temperature should be kept at this level during testing. When other brine temperatures are encountered, it is necessary to use the following table of simple correction factors. These will help provide a completely accurate measurement of brine strength.

APPROXIMATE CORRECTION IN SALOMETER DEGREES

Observed Salometer reading	Subtract per degree below 60° F.	Add per degree above 60° F.
0 to 10	0.049	0.060
11 to 20	0.064	0.082
21 to 30	0.077	0.094
31 to 40	0.087	0.103
41 to 50	0.095	0.112
51 to 60	0.102	0.118
61 to 70	0.107	0.123
71 to 80	0.112	0.128
81 to 90	0.116	0.131
91 to 100	0.120	0.134

For measuring cold brines, such as those used in meat-packing plants, special 38° F. Salometers may be used. Special temperature-correction factors are available when using this type of Salometer to test brines above or below 38° F.

2. Brine should be tested only in a straight-walled cylinder made of clear glass—set on a level surface. Any moisture that collects on the outside of the cylinder should be wiped off before testing procedures start.

3. Salometer stem must be thoroughly dry, clean, and free from grease or caked salt crystals. Also, the Salometer should not touch the sides of the cylinder when readings are taken. It should be read with the stem in a vertical position.

4. Check new Salometers by placing them first in clear water; reading should be 0° S. Then empty the cylinder, rinse with a saturated salt solution, and refill with fully saturated brine; reading should be 100° S. Both water and brine should be at 60° F.

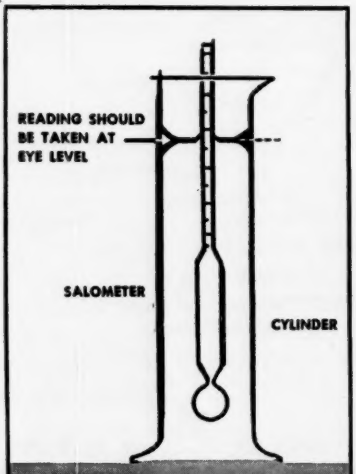


Illustration showing the proper eye level for reading a free-floating Salometer in a straight-walled glass cylinder.

5. Correct reading technique. Brine tends to rise along the sides of a glass cylinder, forming a concave surface known as a meniscus. For correct reading, the eye should be brought to a point level with the *bottom* of this meniscus. Errors of two or three degrees are possible if reading is taken at the point where the brine has risen along the sides of the cylinder.

Special Salometers. In the canning industry, where brine is used for quality grading, a different type of Salometer is often used. It's graduated on a scale where 100° S. represents brine containing 25% salt, instead of the normal 26.395%. Special hydrometers may also be used in the tanning or chemical industries. But the same procedures outlined here must always be followed when brine is to be tested—no matter what type of hydrometer a plant uses.

TECHNICAL SERVICE WITH YOUR SALT

Through skilled and experienced "Salt Specialists," International can help you get greater efficiency and economy from the salt or brine you use. International produces both Sterling Evaporated and Sterling Rock Salt in all types and sizes. And we also make automatic dissolvers in metal or plastic for both kinds of salt. So we can recommend the type and size of salt most perfectly suited to your needs.

If you'd like help on any problem concerning salt or brine—or further information on testing brine strength—contact your nearest International sales office.

International Salt Co., Scranton, Pa.
Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, Ohio; Cleveland, Ohio; Philadelphia, Pa.; Pittsburgh, Pa.; Richmond, Va.

Washington Newsletter

CHEMICAL WEEK
November 30, 1957

Impact of the turnaround on defense spending is being felt. Eisenhower has torn up his directive to the Pentagon to keep next year's spending to $38 billion; now, the lid's off on service spending. But increases will be highly selective—and will be partly covered by economies elsewhere: e.g., closing of some overseas bases, release of more servicemen.

Near-term spending increases won't be particularly large—but there's virtual unanimity among all observers that the Pentagon spending total will continue to rise. It will surely go to $40 billion, perhaps by the end of fiscal year '59, which begins next July 1. Officials inside and outside the government predict a rise to at least $43-44 billion within three years. Some responsible Congressional officials say that by the time the turnaround finally works its course—perhaps over a three- to five-year period—the Pentagon's spending may be close to $50 billion/year.

More funds will be allotted to missiles procurement. The only question is how much more. A hint comes from Air Force Chief of Staff Gen. Thomas D. White—he says the Air Force alone will spend $2.5 billion on missiles output next year—that's as much as all three services are spending now. AF takes a $1.7-billion slice of today's missiles procurement funds, about two-thirds of the $2.5-billion total. If other services get proportional boosts, the fiscal '59 total will hit about $4 billion.

The IRBM rivalry between the Air Force's Thor and the Army's Jupiter complicates the picture. (IRBM is short for intermediate-range ballistic missile.) A decision on which of these weapons will be put in production (the other will be killed) is due before July 1—the start of fiscal '59. Feeling is that General White anticipates a victory for Thor advocates in projecting a doubled missile procurement budget for the Air Force. Since he won't confirm or deny this, his figures may not be a reliable barometer for estimating total Pentagon spending on missiles production.

No matter how the decision goes, the fuel picture won't be changed much. Thor and Jupiter are designed to use the same liquid-fuel rocket engine (North American Aviation's Rocketdyne Division has rocket system contracts for both IRBMs). Moreover, the Navy foresees a modest hike in funds for its IRBM—the solid-fuel, ship-launched Polaris (Aerojet-General is producing the Polaris engine). Polaris had been scheduled to become operational in 1960-61; that target date has been advanced with the turnaround on funds.

The chemical bomber's status is still uncertain—ditto for the nuclear airplane. The Air Force has evaluation teams at Boeing and North American Aviation—reportedly will give one of these firms a prime contract by Dec. 31 for a prototype chemically fueled bomber. But new funds

for chemical- and nuclear-fueled planes were killed by Pentagon higher-ups (there's some nuclear bomber money in AEC's budget, however) before Eisenhower lifted the ceiling on '59 defense spending. Expectation is that the money will be restored.

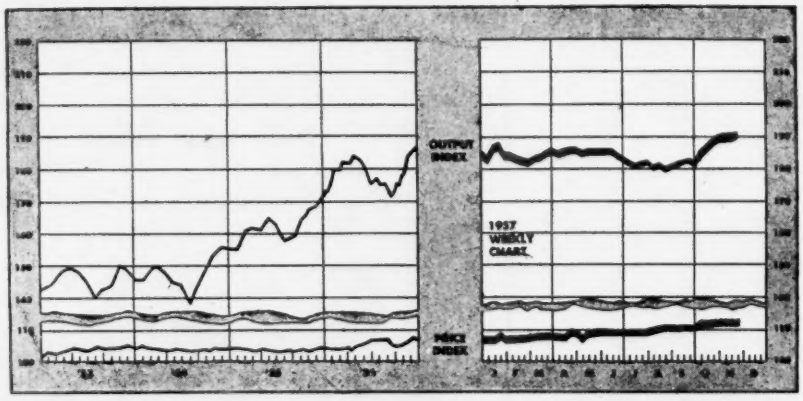
•

The Federal Reserve's credit liberalization is only the beginning of Washington's actions to offset the business slide. It's the first tangible action aimed at reassuring businessmen that Washington will react in time to prevent business softness from growing into a real recession.

•

More helium capacity is in the works. Interior Secy. Seaton is dickering for Budget Bureau approval of a $14-million request to Congress for a new 240-million-cu.-ft./year helium extraction plant. Budget officials want to hold the amount to $10 million. Seaton's proposal would boost U. S. capacity to 600 million cu. ft./year by '60—meet anticipated increases in demand through '63.

The government is working on a helium conservation policy (about 90% of current production of helium is burned up with marketed natural gas). A committee report is due Dec. 31 on these proposed solutions: (1) a government fiat to halt natural gas output from fields lacking helium plants (such fields now supply 15 million Midwesterners, but other wells could take up the slack; (2) extensive helium plant building by government or industry—the latter, if a way is found to overcome industry's reluctance to buy into this field.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	190.0	190.5	183.3
Chemical Week wholesale price index (1947=100)	111.2	111.2	106.6
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	38.83	37.97	41.64

MONTHLY Production (Index 1947-49=100)	Latest Month	Preceding Month	Year Ago
All manufacturing and mining	147	145	151
All chemical products	189	185	182
Industrial chemicals	210	206	198

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U.S.I. CHEMICAL NEWS

November 30 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1957

U.S.I. Joins Mallory And Sharon in Integrated Company to Produce Zr, Ti

U.S.I. will soon join in the management of Mallory-Sharon Titanium Corporation which will change its name to Mallory-Sharon Metals Corporation. The reorganized company will then produce zirconium and titanium metals and mill products, and other special light metals such as hafnium. Each of the following companies owns a one-third interest in the new enterprise: National Distillers and Chemical Corporation (U.S.I. Division), P. R. Mallory & Co., Inc. and Sharon Steel Corporation.

All assets of both the Mallory-Sharon Titanium Corporation and Reactive Metals, Inc., as well as USI-National Distillers' zirconium plant and forthcoming titanium plant will be combined in the newly formed corporation. With assets exceeding $55 million, the new company will be the largest fully integrated producer of special metals.

Presidents of the three owner companies have made this joint statement: "This consolidation of interests creates a completely integrated special metals company with technical 'know-how' and facilities for every step, from original chemical process to production and fabrication of finished products. The benefits from this strengthening of operations, plus the combination of current and future research activities, hold great promise for present production of titanium and zirconium and for other special metals as well."

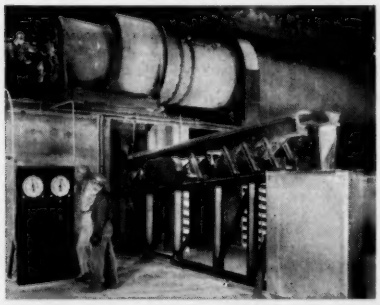
Zirconium Metal Plant Starting Up

In 1956 U.S.I.-National Distillers was awarded a contract by the Atomic Energy Commission to supply one million pounds of zirconium metal annually for a five-year period. A plant was designed and built at Ashtabula, Ohio with a design capacity of 2 million pounds per year, and the plant is now in process of being started up. Hafnium sponge and oxide will also be produced as an adjunct to the zirconium operation.

A titanium sponge plant with a design capacity of ten million pounds per year is under construction at Ashtabula.

Both of these plants have been designed to utilize a new sodium-reduction process developed by U.S.I.-National Distillers. It is

MORE



Zirconium oxide kiln in chemical processing section of Mallory-Sharon Metals Zr plant.

Methionine Given After Exposure Reduces Damage From Radiation

Report Is First Evidence of Methionine's Effectiveness Against Tissue Breakdown When Given After Exposure to Radiation

New experimental evidence indicates that the sulfur amino acid, methionine, is even more effective in reducing tissue damage caused by radiation when administered *after* radiation exposure than it is when given *before* exposure.

Earlier reports have demonstrated methionine's ability to protect experimental animals from the effects of subsequent exposure to X-ray irradiation (U.S.I. CHEMICAL NEWS, Sept.-Oct., 1955). The present work, reported in a leading English scientific journal by Indian scientists working in Bombay, is believed to be the first to show methionine's post-irradiation effectiveness.

In the tests, deoxyribonucleic acid (DNA) levels in the liver, spleen and bone marrow were used as a measure of the extent of radiation damage. DNA is the substance in the nucleus of all cells believed to carry the mechanism of heredity. The researchers found that DNA levels in untreated animals were reduced by as much as 87% after exposure to radiation. DNA in methionine-treated animals was reduced to only about one-half of pre-exposure levels.

Methionine administered prior to irradiation afforded a considerable amount of protection, but was less effective than post-irradiation treatment. The radiolability of methionine—its tendency to be destroyed by ionizing radiations such as X-rays—is believed to account for this reduced effectiveness.

In evaluating the pre- and post-irradiation effectiveness of methionine, however, it should be noted that in the recent work methionine was given intraperitoneally. It has been reported (U.S.I. CHEMICAL NEWS, July, 1957) that radiation can cause a decrease in the ability of the body to absorb methionine that has been fed orally.

Methionine Aids Nucleic Acid Synthesis

The specific means by which methionine acts to prevent tissue damage from radiation is related to the nucleic acid synthesizing mechanism itself. Methionine is known to play a part in two chemical processes which are involved in the production of DNA — transmethylation and phosphorylation. (Methionine is a principal source of methyl groups for the animal organism and is a precursor of creatine, which is active in the phosphorylation process.) Thus, by aiding two of the essential routes by which nucleic acids are made, methionine keeps the synthesizing mechanism in order and exerts a therapeutic influence on radiation injury.

The considerable amount of research that has been done on methionine's effectiveness in minimizing radiation damage stems from methionine's well known ability to promote healing of wounds and burns. It is also a detoxifying agent through its action on the liver.

MORE

Brightness Is Controlled By pH in Sodium Peroxide Bleaching of Groundwood

A recently reported investigation into the fundamental chemistry of bleaching groundwood with sodium peroxide indicates that reaction rate and pulp brightness increase with pH. However above a certain pH, a colored compound is formed which tends to yellow the pulp. Therefore there is, in commercial practice, an upper pH limit for the production of pulp having maximum brightness.

Brightness Development in Sodium Peroxide Bleaching of Groundwood

pH	Time to reach max. brightness, min.	Effective No peroxide consumption, g./l.	Maximum brightness, %
9.0	180	0.10	57.1
10.0	130	0.33	59.3
10.5	110	0.47	60.2
11.0	80	0.53	60.7
11.5	70	0.53	60.2
12.0	40	0.56	60.4
12.5	20	0.48	59.2

Sodium peroxide bleaching of groundwood has been used for some time by pulp makers. It produces a relatively large increase in brightness at low cost, without affecting pulp quality adversely or decreasing yield materially.

This study reveals that the rate of total peroxide consumption increases as pH rises from 9 to 12, due largely to the increased rate of the peroxide-groundwood reaction. The rate at which peroxide decomposes to form oxygen also goes up with pH, but this is minimized by materials in the groundwood and by adding stabilizers.

It was also learned that the rate and amount of brightness improvement increases with pH. Yellow color, mentioned previously, increases at the same time, the effect being more pronounced toward the end of the bleaching period. It causes reversion of brightness in some cases.

The most effective bleaching under the conditions used by the investigators was obtained at pH 11. Here the peroxide-groundwood reaction is fast enough, in relation to the decomposition reaction, to give appreciable bleaching in the first third of the bleaching period. On the other hand, the pH level is not high enough to produce excessive color shift and brightness reversion.

Sodium peroxide for groundwood bleaching is made from metallic sodium at U.S.I.'s plant in Ashtabula, Ohio.

November 30 ★ **U.S.I. CHEMICAL NEWS** ★ 1957

CONTINUED Methionine

Methionine also is known to improve feathering in poultry and hair coat quality in fur bearing animals. As the only sulfur-containing essential amino acid, it is widely used in the manufactured feed industry as a protein supplement to promote growth and health in livestock and poultry.

The first commercial synthesis of methionine, which has led to its widespread use in medical and animal feed applications, was pioneered by U.S.I.

CONTINUED New Company

believed to be the lowest cost method developed to date for the production of these metals. Mallory-Sharon Metals will be granted an exclusive, royalty-free license in the U. S. for the production of titanium, zirconium and other metals by this process.

Sodium is supplied by the existing U.S.I.-National Distillers sodium operation three-quarters of a mile away. At Ashtabula, Mallory-Sharon Metals will also have facilities for melting zirconium metal into ingots.

Titanium sponge will be melted and both metals fabricated at the existing Mallory-Sharon plant at Niles, Ohio.

High Purity Silicon Being Made Via Sodium Reduction

High purity metallic silicon for electronics use in semi-conductor devices is now being produced by the sodium reduction of silicon tetrachloride. The product contains boron in the order of two parts per billion, and has resistivities up to 500 ohm-centimeters.

Several thousand pounds of the material have already been manufactured in one plant overseas, and indications are that this process is more economical than either hydrogen reduction of silicon tetrachloride or reduction of silicon monoxide.

New Cooling Towers Packed with Polyethylene Grids

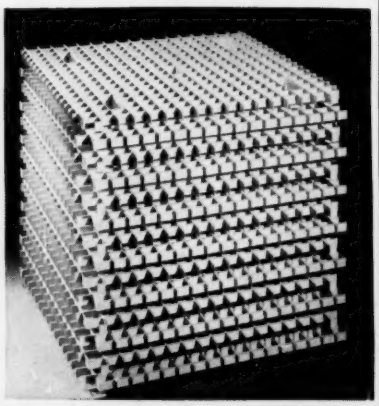


Photo shows typical stacking arrangement of polyethylene grids. (courtesy Fluor Products)

Polyethylene is now being injection molded into grid packings for water cooling towers. These grids are designed to provide the air-water contact surface usually provided by wooden bars or slats. They cool very efficiently, and eliminate maintenance problems due to their strength and corrosion resistance.

The grids are available in 2 sizes (3 ft. sq. and 2 ft. by 4 ft.). They are stacked vertically two inches apart in the cooling tower. This spacing arrangement allows for horizontal distribution of rising air and cascading water. It provides the same cooling efficiency as would the usual unspaced series of wooden slats while saving weight and material.

In addition to applications in new industrial and air conditioning cooling towers, these polyethylene grids can replace worn out portions of wooden packings in existing cooling towers. They have potential in gas scrubbers, trickling filters and other operations where efficient gas-liquid contact is desired.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

Polyethylene packaging materials are illustrated in a recent brochure. Bags, sheets, drum-liners and pressure-sensitive tapes are described, as well as water vaporproof, flexible and protective wraps made of barrier material. **No. 1291**

Buffer salts in disposable packets are now available. Each packet is carefully weighed, has been lot-analyzed for purity. Contents dissolved in a litter of water provide a ready-to-use buffer solution. **No. 1292**

Tape entry to computers is facilitated by a new machine with internal core storage, which gathers asynchronous digital information from external sources and combines them in any sequence with record numbers and manually inserted data. **No. 1293**

A new pamphlet on zirconia discusses the history, the chemical and physical properties, the composition, and the porosity of the chemical. Included is a refractory comparison chart. **No. 1294**

A calibrated dispenser delivers a specific volume of liquid from 1 cc. to 100 cc. rapidly and repeatedly. Measurement is automatic, said to be accurate to within 1%. Can be used for volatile, toxic, or alkaline liquids. **No. 1295**

Two monomeric ester-type plasticizers are said to be useful for safety glass, synthetic rubbers and lacquers, and as plasticizers for cellulose acetate butyrate, polystyrene, acrylic resins and ethyl cellulose. **No. 1296**

A pamphlet on fire research reports of the facilities, personnel and management of the principal agencies engaged in this work. It also describes tests of various materials and fire-protection systems. **No. 1297**

A polyethylene pump is now being made for use with inflatable boats and mattresses. Air is trapped inside the bag by folding the top together, and forced into the mattress through a valve by compressing the bag. **No. 1298**

Oleoresin mace, a new spice oleoresin, is described as a dark, reddish-brown, homogeneous liquid, and is said to be completely solvent-free. It contains from 50 to 60 cc. of volatile oil per 100 grams net. **No. 1299**

A new nickel stripper is reported to contain no cyanide, caustic or acid, and to be stable over long periods of time, even at high temperatures. Manufacturer claims it will not fume, pit or corrode. **No. 1300**

Why a Buyer Blows His Top

"I don't have an appointment, I happened to be in the neighborhood, and. . ."

"So I'm sittin' there, and here comes the most gorgeous blonde. . ."

"Well, I don't know much about that item, but product No. 47 here . . ."

"Service? Didn't the office handle it?"

"What! You're canceling?"

There is growing indication this week that many chemical suppliers are losing business because of a lack of general service contact with customers and a lack of good all-round salesmanship.

One large-volume chemical purchasing agent put it this way: "These days, quality and price of a given product are standardized throughout the industry. So, all the supplier is really selling is service. But in too darn many cases, this is the most neglected part of the buyer-supplier relation."

That problem turns up repeatedly in a new CHEMICAL WEEK nationwide spot-check of chemical purchasing agents, who are fast becoming hot-under-the-collar. Major complaints:

- Inability to get action from suppliers on service problems.
- Salesmen who talk about too many products—some mention as many as 75 at a sitting.
- The salesman who "happens to be in the neighborhood" and drops in without an appointment.
- Salesmen who call, knowing nothing about the buyer's needs, products or policies.
- Salesmen who try to sneak sales through via the "back door."

Blame Both: Buyers blame both salesmen and their sales managers for headaches engendered by poor "followup service" from large companies.

The situation often develops like this: a buyer gets a frantic call from the plant reporting that quality of a supplier's products is off, or that delivery is running late. The purchasing agent tries to phone the salesman, but more often than not the salesman is out—selling. A call to the supplier's office often brings a fast shuffle from department to department. When he hangs up the phone, the buyer usually isn't sure the people he talked with will give him immediate action on his problem.

One solution noted in the *CW* survey: buyers recommend that salesmen give them the name and phone number of a man in the supplier's office who knows the account, and cares enough to give fast, complete service. Buyers speak warmly of companies that have offices staffed with "inside salesmen" who give the impression that they are there for the sole purpose of servicing accounts.

Time, the Essence: Buyers agree that most of their problems with individual salesmen can be tied to a single factor—time. Purchasing agents just don't have enough hours in the day to see all the salesmen who call, and still have enough time left for their other

duties. Most of the purchasing agents contacted report that the number of sales calls has increased since last year—some say as much as 30-50%.

How often should a salesman call? Opinion varies widely, but most purchasing agents suggest that routine calls should be held to less than 12 per year. But almost all buyers tell *CW* they are happy to see a salesman anytime if he has something new to sell or discuss.

Purchasers blame sales managers for unnecessary "missionary" calls.

The appointment system is another moot point. About half the chemical buyers *CW* contacted prefer that salesmen phone a day in advance of an interview; about 50% like for the salesman to phone a few hours in advance. Very few look kindly on the salesman who drops in with no advance notice.

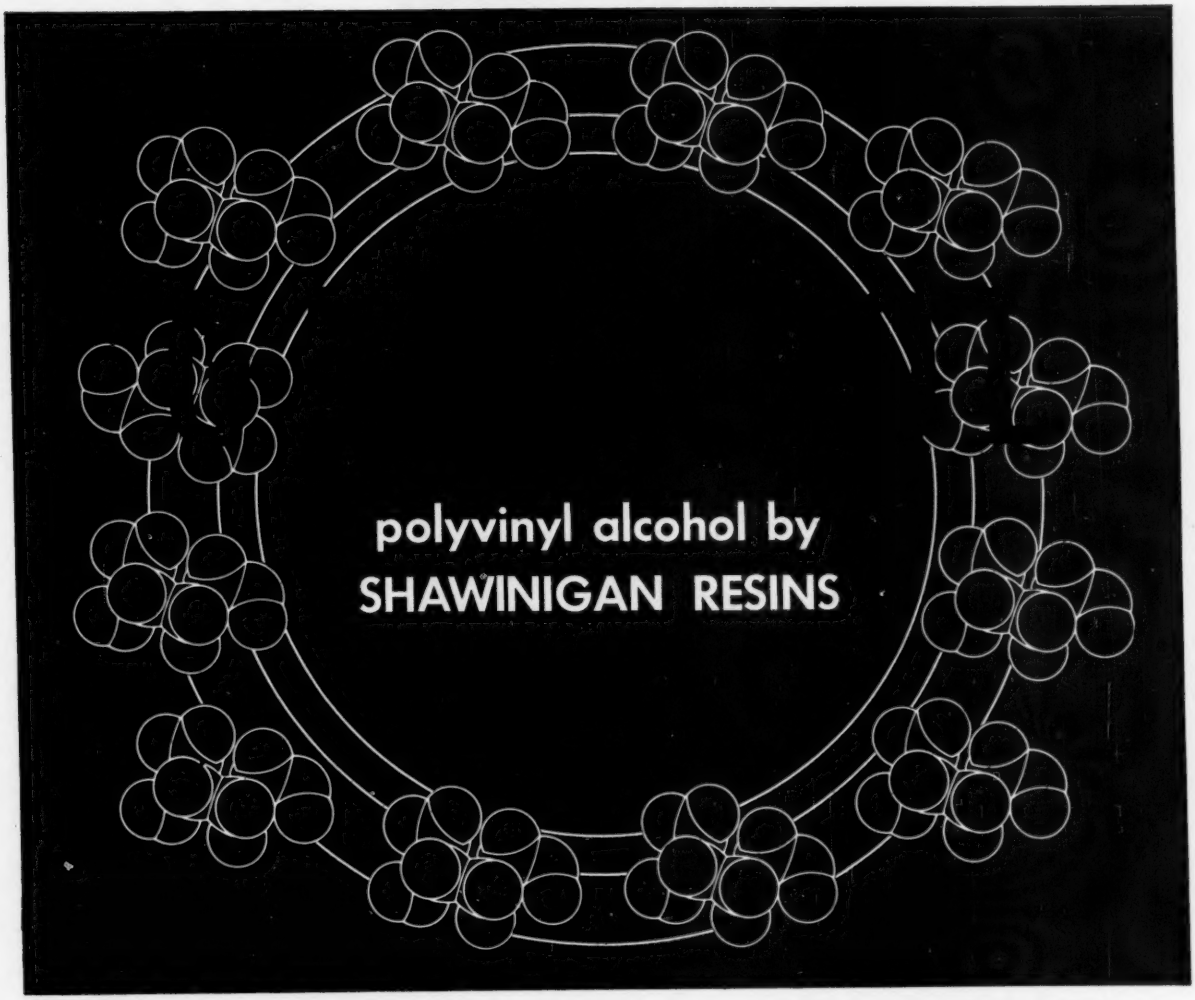
It's difficult for a purchasing agent to control the number of salesmen calling on him, but he can limit length of the interview itself. That's why the majority of buyers agree that the length of the average sales presentation hasn't increased with greater sales competition.

Though few buyers keep an eye on the clock, most of them sense a proper time for ending the interview, then drop a hint to the salesman. And they report that chemical salesmen are quick to take the hint. This system gives an average interview time of 15-20 minutes.

Too Many Products: Once the salesman gets into the buyer's office, how much ground should he try to cover? Most purchasing agents report that today's salesmen often talk about too many products. Virtually all of the survey respondents say the maximum number of products or product groups discussed at a sitting should not exceed six. Many prefer that discussion be limited to three.

Another time-waster is the salesman who spends the first 10 minutes talking about baseball, the weather and the pretty receptionist before getting down to business. Says one buyer: "I know that chemical sales are still handled largely on a personal basis, and a salesman needs an opener of some kind. But he can save my time and his own by keeping the small talk as brief as possible."

Another potential order-killer is the salesman who "just happened to



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be in the neighborhood" and thought he'd drop in. Purchasing reaction to this fellow is often violent: "If that's all the reason he has for coming in, then he shouldn't waste my time. There are men waiting in the reception room with ideas, trade news, or new products to be discussed. Why make them wait while I talk with a fellow who just happened to be in the neighborhood?"

Purchasing agents today are complaining that salesmen too often call on them with no idea of the buying company's needs, products or policies. To offset this problem, many buyers keep company booklets on reception-room tables to give salesmen a quick rundown while they wait for an interview. Still, they find these booklets are too often ignored.

Most buyers feel that a salesman, before calling, should find out what the company makes and what general product types it buys. But, perhaps more important, the salesman should know the history of relations between his and the buyer's company—what volume does the buyer already do with the salesman's company, and vice versa.

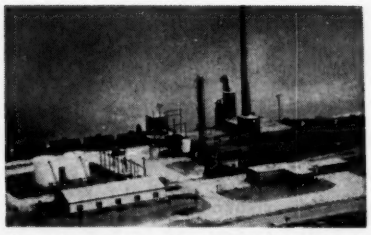
The Back Door: One-third of the buyers surveyed admit they have problems with back-door selling (*CW, March 9, p. 126*). Some situations begin when a man in the plant clips a coupon from a supplier's trade magazine advertisement. This gives salesmen valuable names and addresses, which they follow up with a letter or phone call. Other back-door problems begin when salesmen meet chemists at trade meetings.

The back-door problem isn't an overwhelming one (no buyer reported more than 5% of sales being made in this way), but it is a headache for some.

Less than half the companies covered have a definite management policy condemning back-door deals. And interestingly enough, those who do have set rules report less trouble with this problem.

Time and Temper: Most purchasing agents realize that the salesman is there not only to sell a product but also to help the buyer do the best possible job. And the main tip they offer salesmen is, "If you want to help the purchasing agent, help him save his time and temper—both before and after the order is placed."

"It keeps sending back 'Spencer Service Is Wonderful'!"



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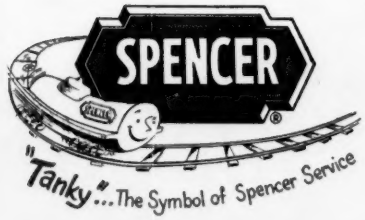

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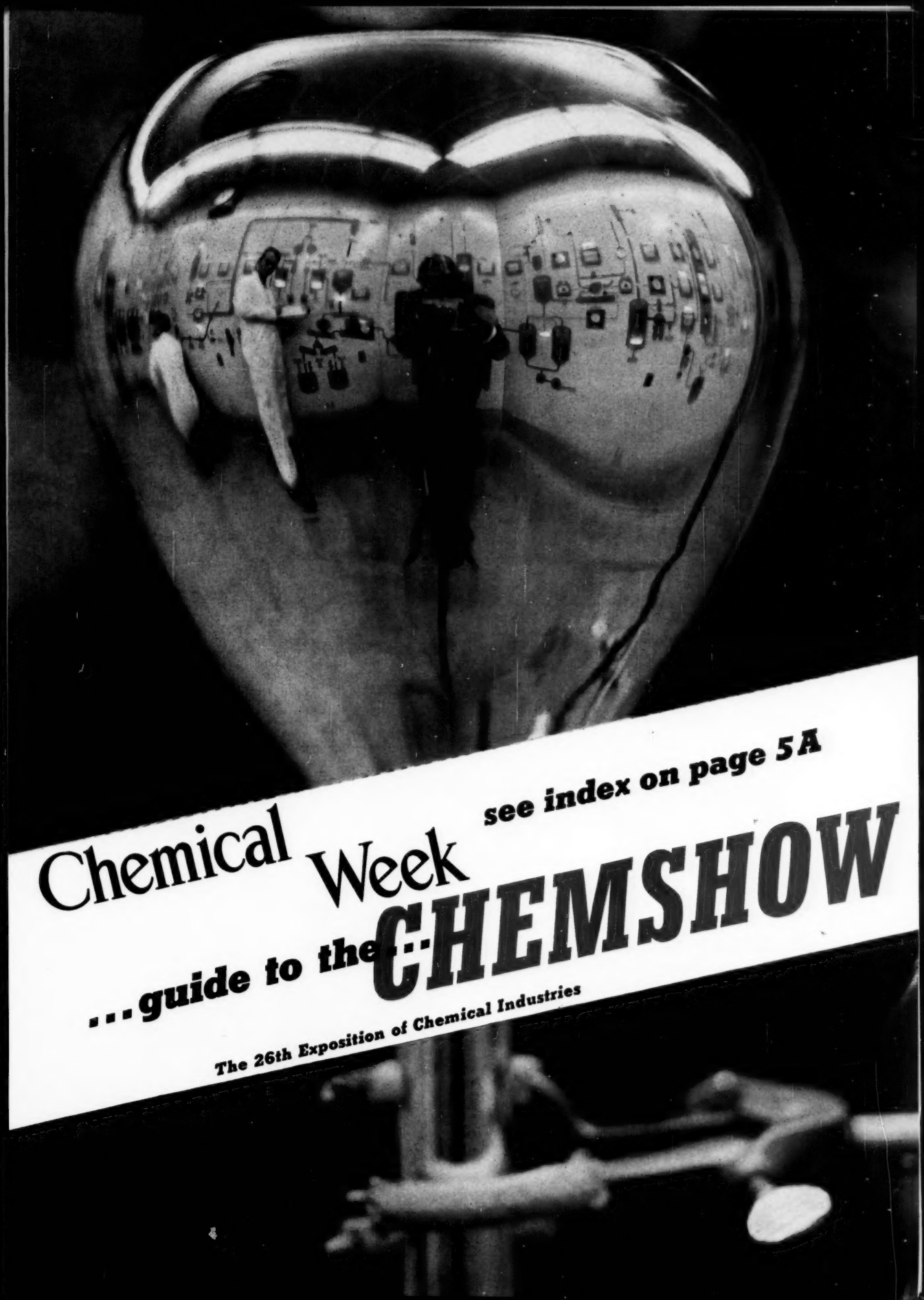
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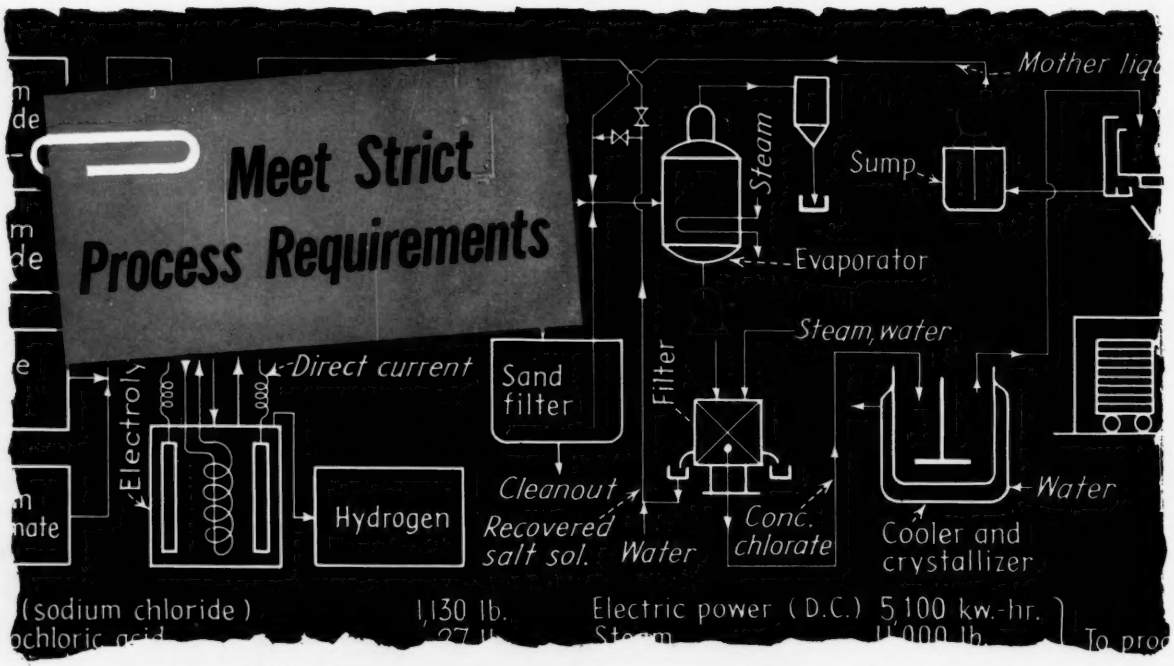

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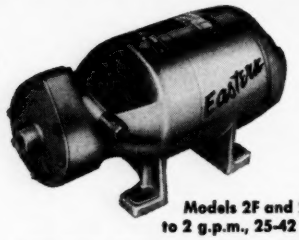

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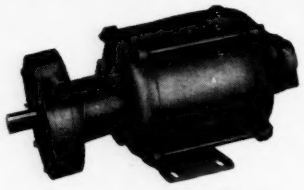

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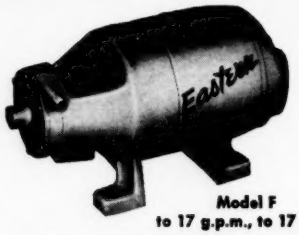

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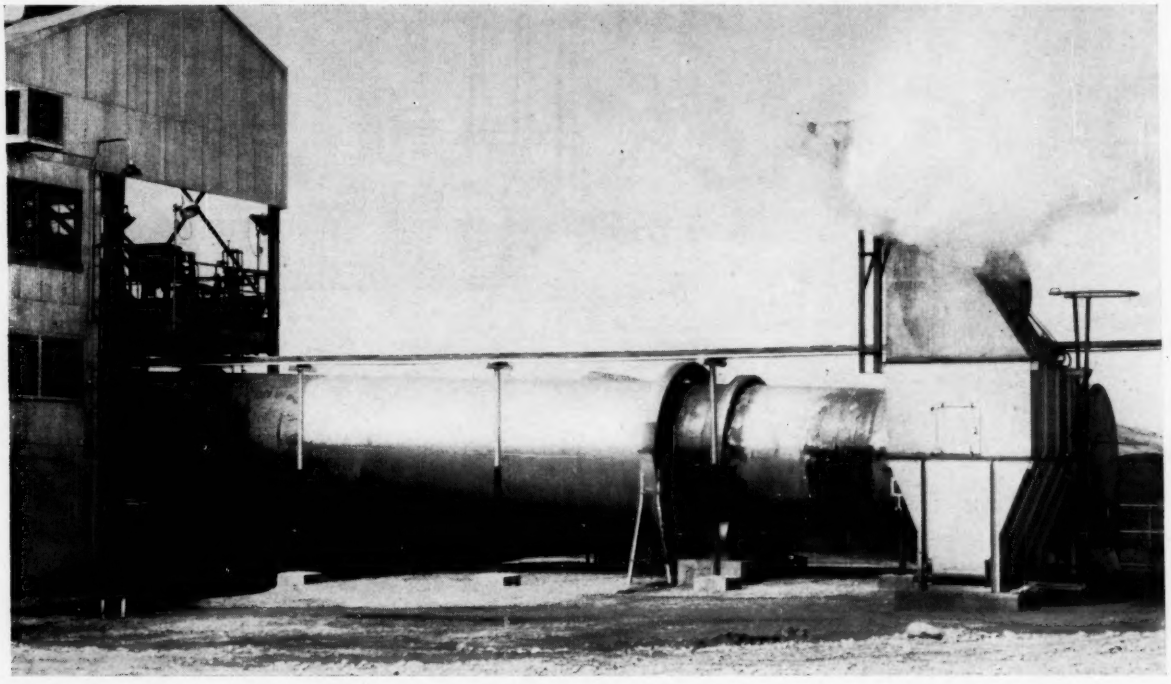

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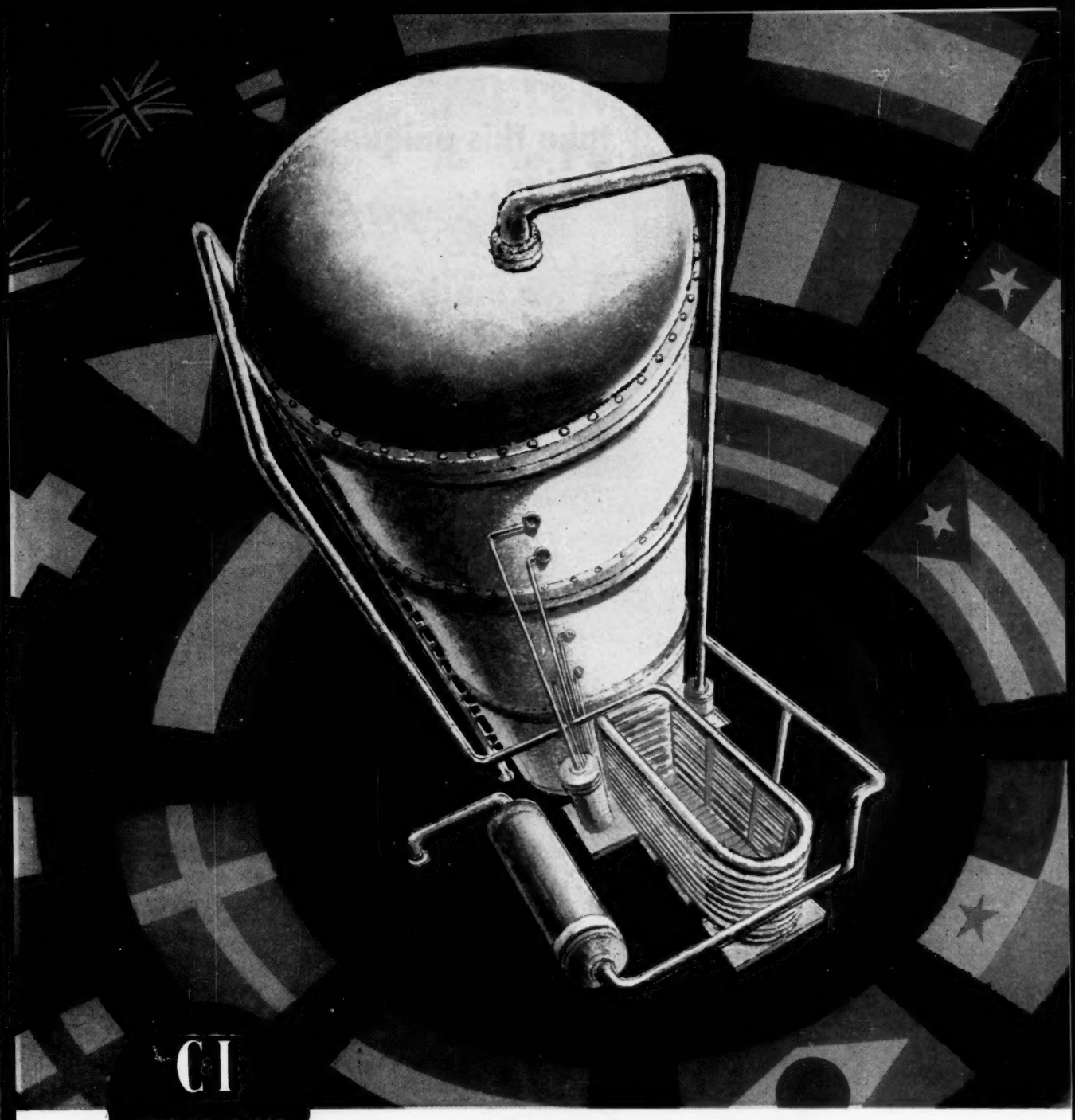

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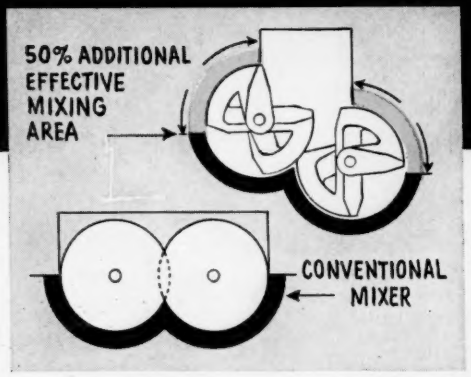

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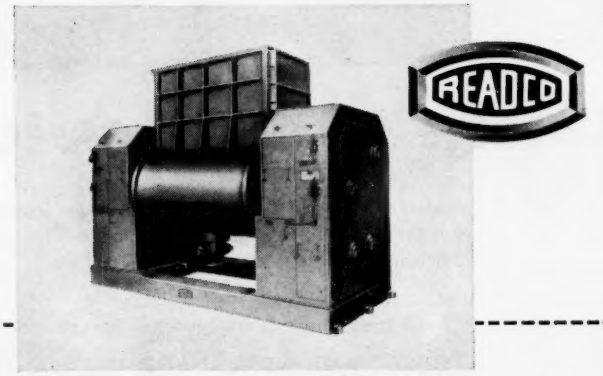

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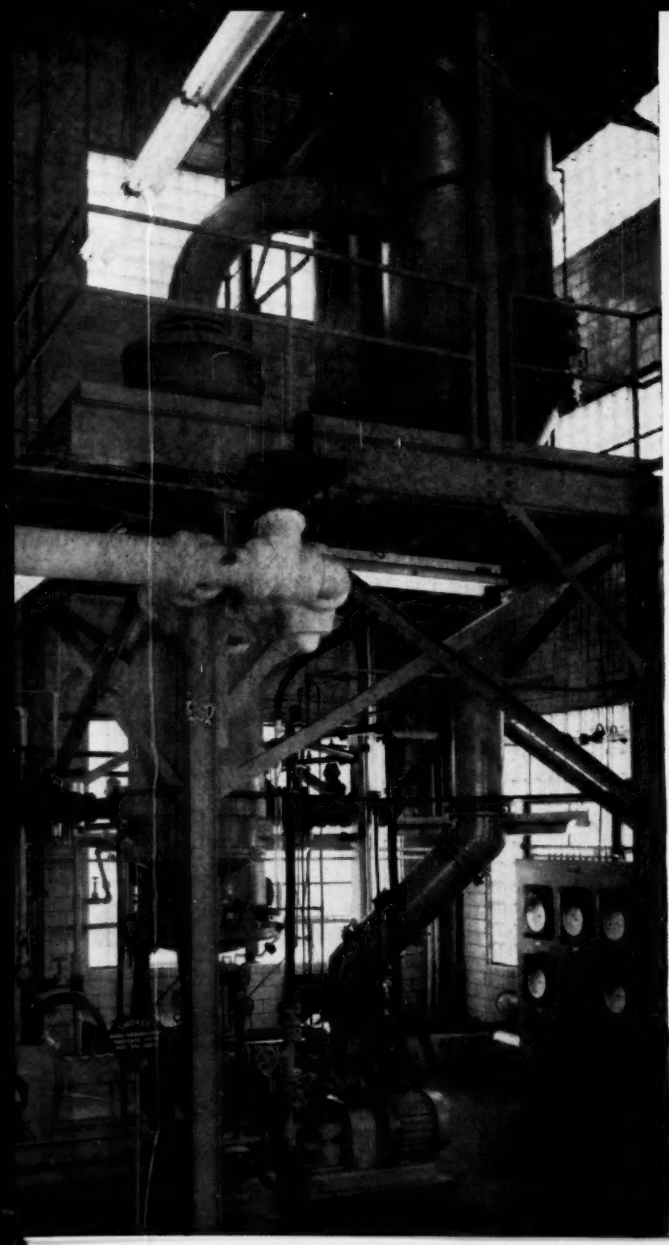
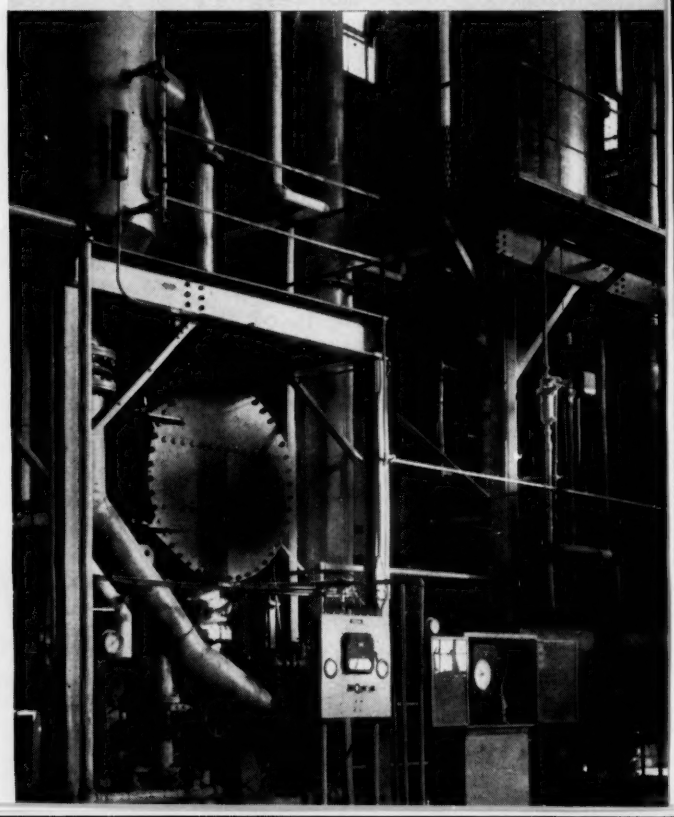
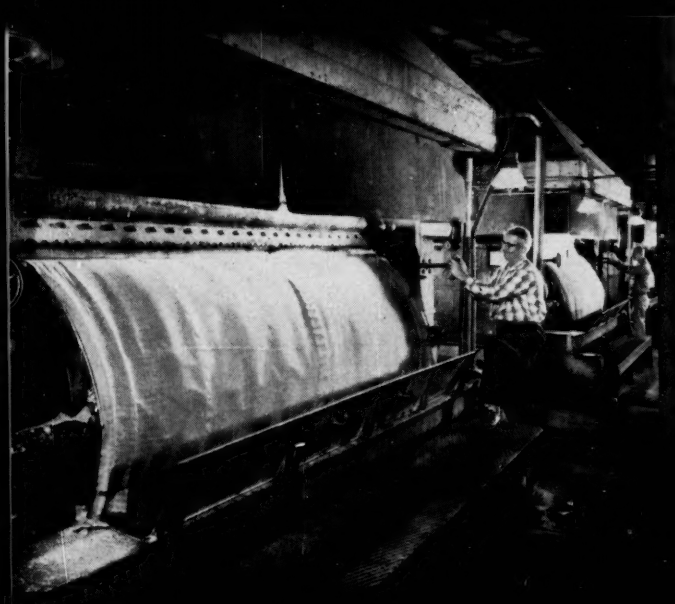


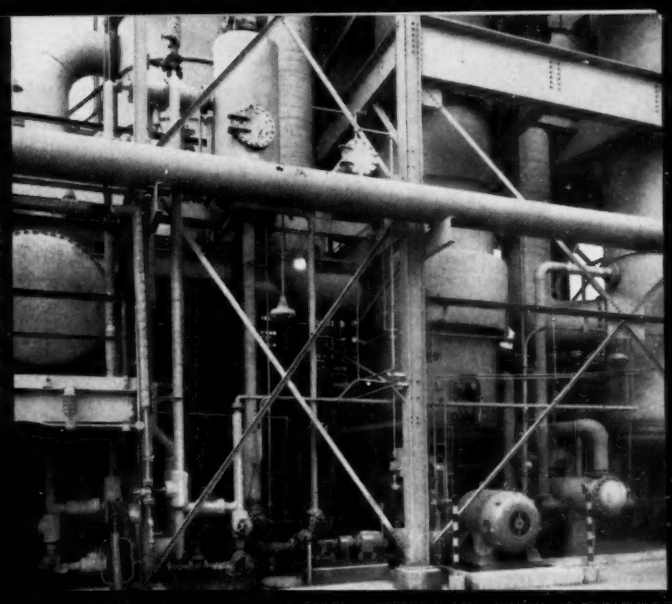
Hercules Powder uses an acid resistant, forced circulation evaporator to concentrate highly corrosive protein solution.

Fish Products utilizes two evaporators to recover vitamins and protein solids from fish oil waste.





National Distillers produces livestock and poultry feed from distillery grain residue by continuous drying with Buflovak double-drum dryers.



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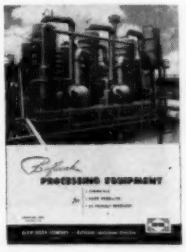
Buflovak has the best equipped laboratory for analyzing problems in drying, evaporation, extraction, solvent recovery crystallization and food engineering. Products can be tested by the beakerful or run in carload lots on a full production schedule. Over 7,000 tests have proven for hundreds of companies that product research is the sure way to profits.

Skilled engineering provides the right equipment for the job

Because the line is complete, Buflovak engineers can impartially recommend the right equipment to meet specific job requirements . . . basing their selection on known specifications, or on the results of special research. Whenever custom units are needed, Buflovak has the design know-how and production facilities to follow through.

Industry's most modern units upgrade products, improve operations

Dryers, evaporators, flakers, autoclaves, kettles . . . all the units in Buflovak line incorporate advanced design features developed by extensive product research. On schedule delivery . . . superior performance . . . low operating costs . . . and capable, available service are all part of the Buflovak program to build customer profit.



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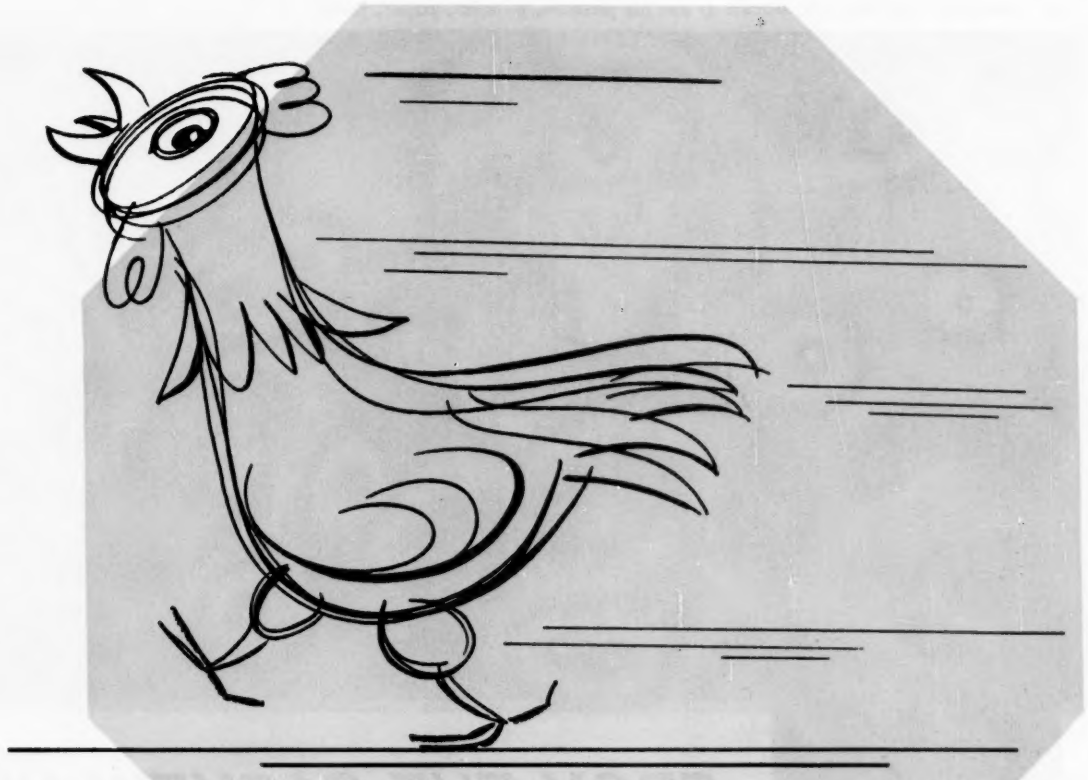

why does a chicken cross the road today?

When a chicken stomps off in a huff these days, more than **likely he's just tried picking one of his** neighbors and has **had a distasteful surprise.**

Poultrymen have tried all manner of remedies to curb cannibalism in their flocks, but nothing succeeded short of cutting off the chickens' beaks! But now, with the cooperation of a leading eastern university, Penick has developed an easy-to-use spray . . . THRAM* . . . that quickly ends picking!

THRAM is economical, easy to use and instantly effective. It makes chicken feathers so distasteful to other chickens that picking stops overnight.

THRAM is an outstanding example of Penick's versatility in manufacturing and marketing diverse chemical specialties. Our unique facilities and organization can be made available to you on a custom basis. We will be glad to discuss your needs in confidence.

*Trademark of S. B. Penick & Company — Patent Pending

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3M Chemicals opening new worlds of use for phenols, plastics, paper, paint

FROM THE CASHEW NUT

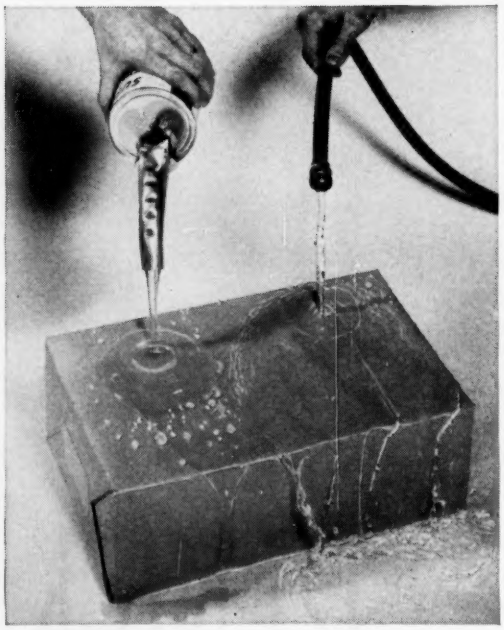
You may owe your life to the cashew nut.

Chances are you do, if you ever slammed on your brakes, came to a quick, positive stop, avoided a fatal accident. For the cashew nut shell is a chemical oddity. Brake lining resins manufactured from its liquid help stop today's cars more safely than any other material.

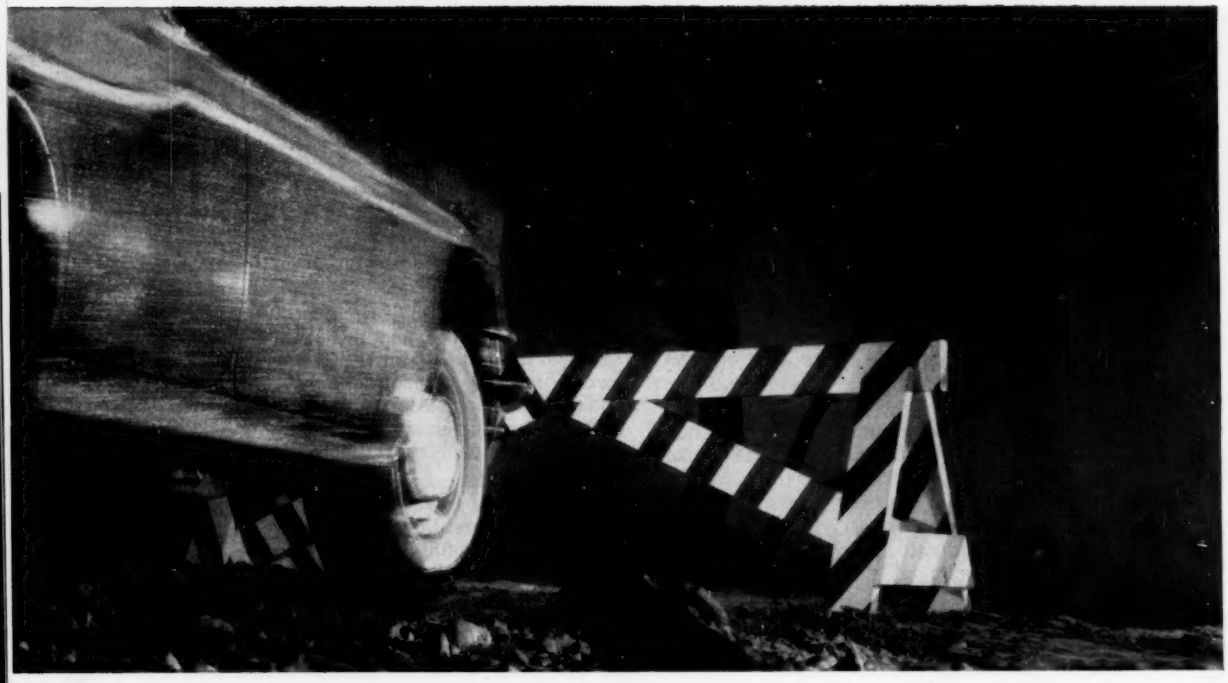
IRVINGTON CHEMICAL DIVISION of 3M makes these CARDOLITE® Brand phenolic friction particles and binding resins. They give you more uniform braking action despite heat or cold. They help reduce "fade". And what's more, they help your brake linings last far longer. Virtually every *quality* American brake lining contains them.

A surprising chemical feat — this transforming of nuts into safety? Not for Irvington Chemical Division resin research. A quarter of a century of experience makes Irvington a resin authority. It produces uniquely valuable epoxy flexibilizers, rubber plasticizers and anti-ozidants, plus remarkable new resins for tooling and vacuum-forming uses.

Where resins may be your answer, consult Irvington Chemical Division research. And see the examples on this page of chemicals made by other 3M divisions, how they're opening new opportunities in many fields. Investigate 3M chemicals. Get free literature and information. Send the coupon on the right today!



Oil Rolls Off this Kraft Paper carton. Water does, too. The carton has the amazing, new protection of "SCOTCHGARD"® Brand Paper Size. This 3M fluorochemical treatment repels grease and oil, yet changes neither the strength, porosity, appearance nor color of the paper. FLUOROCHEMICALS DIVISION



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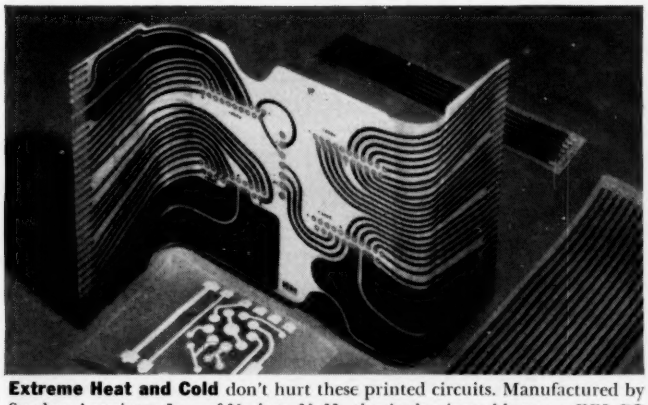
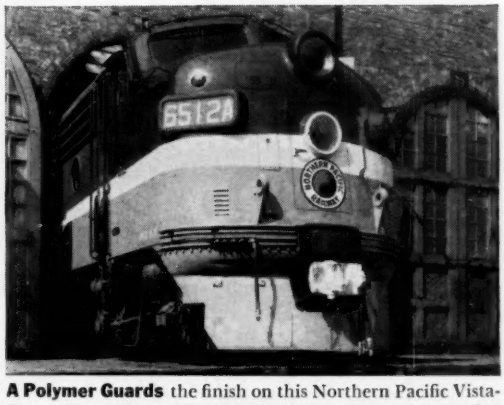


Extreme Heat and Cold don't hurt these printed circuits. Manufactured by Sanders Associates, Inc., of Nashua, N. H., they're laminated between KEL-F® Brand Plastic or printed in KEL-F conductive ink on KEL-F film. These 3M halofluorocarbon products can resist temperatures as low as −320° F., or as high as +392° F. They deliver great dielectric and mechanical strength, flexibility and chemical stability. JERSEY CITY CHEMICAL DIVISION



A Polymer Guards the finish on this Northern Pacific Vista-Dome North Coast Limited diesel locomotive. It's HC-911 polymer concentrate, a new 3M acrylic primer vehicle. Primers based on HC-911 stay resilient, never harden. Flexing under stress, they minimize flaking-off of top-coats applied over them. HASTINGS CHEMICAL DIVISION

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• No matter what your absorption problems may be, chances are you'll find the answer in Micro-Cel—Johns-Manville's new line of synthetic calcium silicates.

Pound for pound, Micro-Cel gives you far more absorption than common fillers like talc and clay . . . even outperforms products like silica gels selling for as much as 10 times Micro-Cel's delivered cost of 8¢ to 10¢ per pound.

Dollar for dollar, Micro-Cel's high absorption also wins out over both low cost and high cost fillers. Only 28¢ worth of Micro-Cel will convert a full gallon of liquid to a dry free-flowing powder. As little as 12¢ worth provides ultimate absorption of a gallon of water.

Industry is putting these properties of Micro-Cel to work in several types of applications: as an absorptive carrier to convert a liquid to a dry free-flowing powder; as a means of drying semi-solids to desired degree; to disperse liquids uniformly in a dry compound; to absorb moisture and reduce drying costs; to control liquid viscosity up to a paste or semi-solid; to assure good free flow properties of deliquescent crystals or powders.

Micro-Cel, the powder that flows like a liquid is a new line of inert synthetic calcium silicates produced by combining lime with diatomaceous silica under carefully controlled conditions. In addition to high absorption, it provides particle size as small as .02 micron and bulking action up to a full cubic foot for every three pounds.

For further information, samples and technical assistance, write to Johns-Manville, Box 14, N.Y. 16, N.Y. In Canada, Port Credit, Ontario.

One pound of MICRO-CEL absorbs as much linseed oil as these weights of other fillers...

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JOHNS-MANVILLE

Micro-Cel is a product of the Celite Division

VOGT identification Disc...

...on top and in sight

makes it easy to identify valves —even in insulated lines

The Vogt tell-all identification disc, on every valve, is permanently located above the handwheel for complete and convenient identification. It shows valve size, catalog and drawing number, materials used for principal parts and primary pressure and temperature ratings. The flat on the handwheel protects the disc in assembly and in service.

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Adv. No. 7 in a series describing the features of Vogt GP Valves.

See what CMC can do

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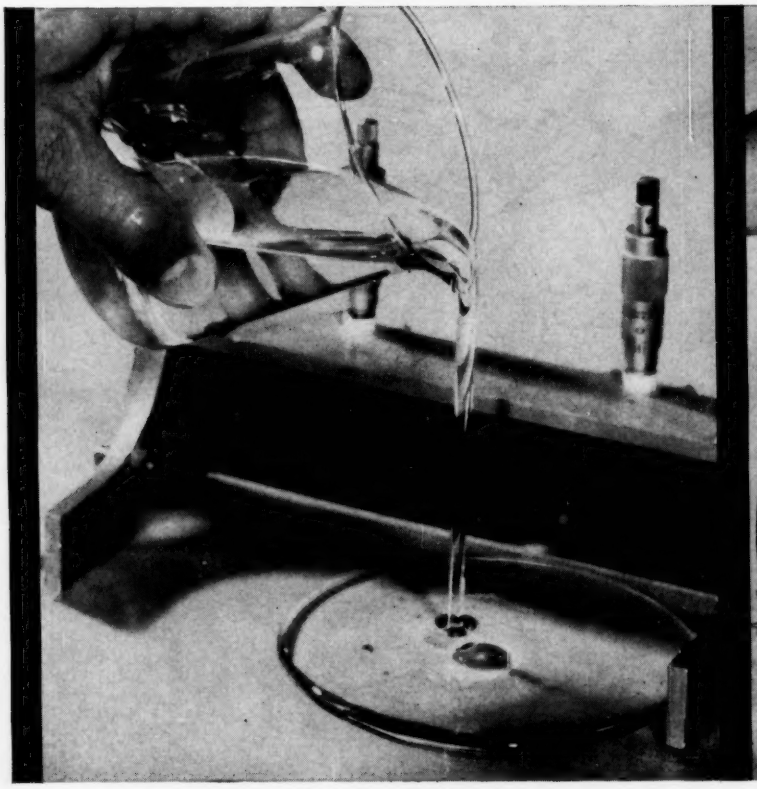

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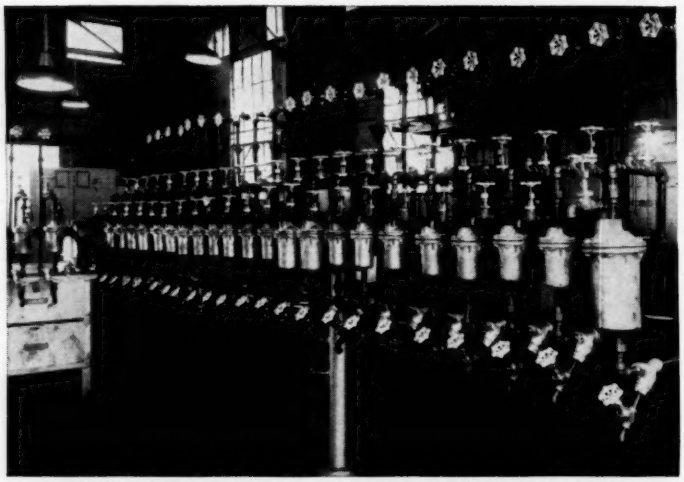
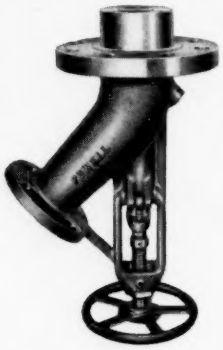


Powell Globe Valves in a plant of one of the country's big chemicals manufacturers.

Fig. 1891—Liquid Level Gauge. Offset pattern. Outside screw rising stem and yoke valves.

Fig. 2172—Small flush Bottom Tank Valve for 150 W.P. Disc opens into tank. Also available with disc opening into valve (Fig. 2173).



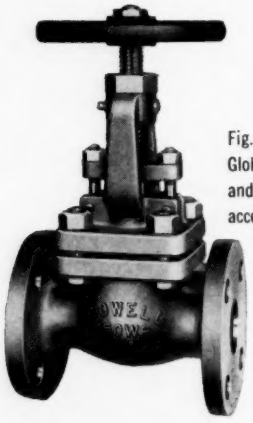


Fig. 2475—Stainless Steel O.S. & Y. Globe Valve for 150 W.P. face to face and end flange dimension are in accordance with latest standards.

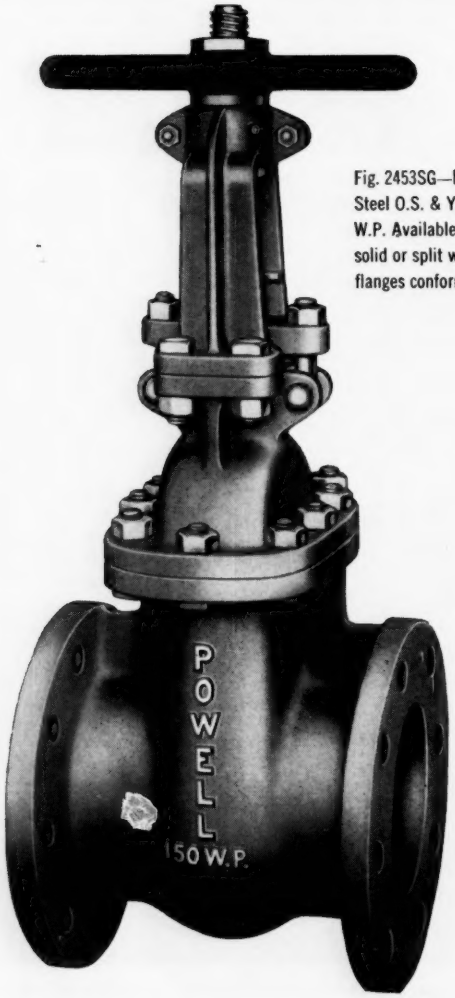


Fig. 2453SG—Large Stainless Steel O.S. & Y. Gate Valve for 150 W.P. Available with interchangeable solid or split wedge disc. End flanges conform to MSS SP-42.

Fig. 2475BSW—Stainless Steel Bell-O-Seal Globe Valve for 150 W.P. For handling heavy water, molten metals, etc. Can also be furnished for 300 W.P.

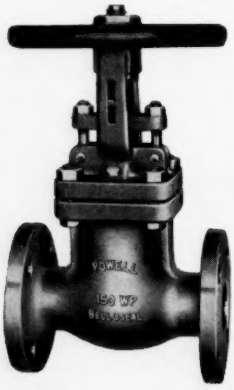
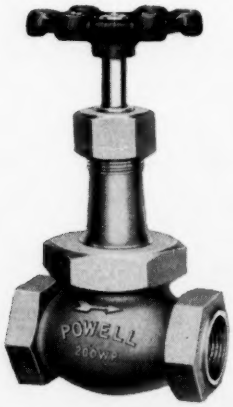


Fig. 1861—Stainless Steel Globe Valve for 200 W.P. Union bonnet, plug type disc.



**Powell Alloy (Corrosion Resistant) Valves are available with screwed or flanged ends. Flanged end valves conform to latest standards.*

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. . . for Corrosive Services

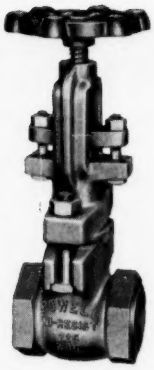

Fig. 2194—Small Ni-Resist. O.S. & Y. Gate Valve for 225 W.O.G. Larger sizes, flanged end, and swing check valves in Ni-Resist also available.

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Your local valve distributor will be glad to tell you all about them. If none is near you, write to us for the full facts on Powell Valves and Powell Engineering Service.

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Fig. 1832—Stainless Steel Gate Valve for 200 W.P. Screwed-in bonnet, inside screw rising stem, solid wedge disc.

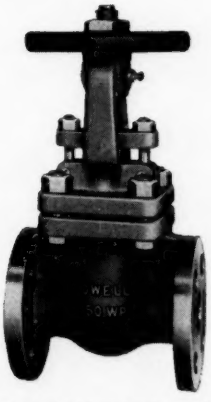

Fig. 2491—Stainless Steel Gate Valve for 150 W.P. Outside screw rising stem and yoke, solid wedge disc. Can be supplied with interchangeable split wedge disc

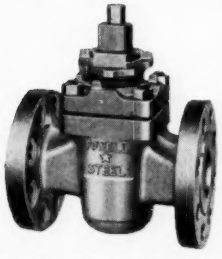

Fig. 1559—Steel Lubricated Plug Valve for 200 W.O.G. Screwed gland type. 6" and larger valves can be furnished for gear operation.

Fig. 1893—Large O.S. & Y. Gate Valve for Paper Mill Service. 3% Nickel Iron Body, bonnet, yoke; stainless steel stem, screwed-in seat rings; Ni-Resist wedge.

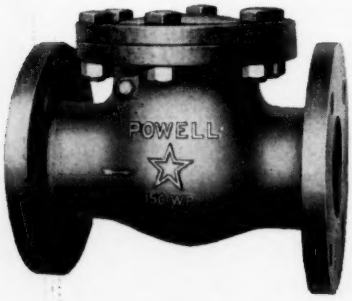

Fig. 2433SS—Large size Stainless Steel Swing Check Valve for 150 W.P. Bolted Cap.

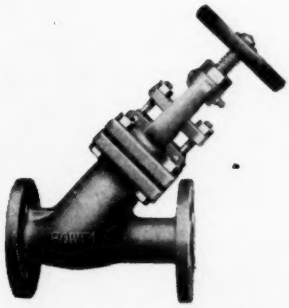

Fig. 2107—Stainless Steel "Y" Valve for 150 W.P. Plug type disc. Face to face and end flange dimensions conform to latest standards.

435 386

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196 595 546 545 496 495 445

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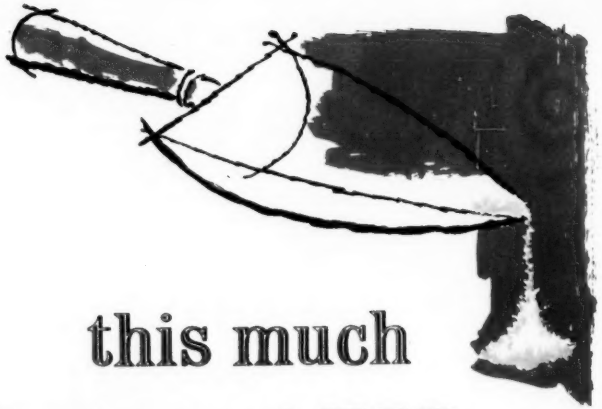

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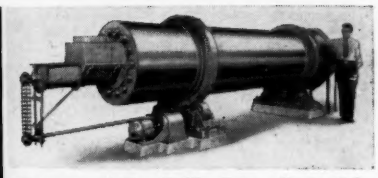
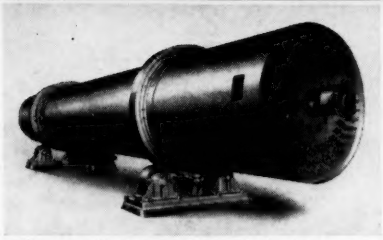
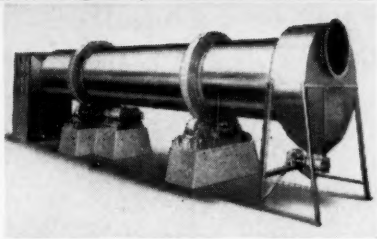


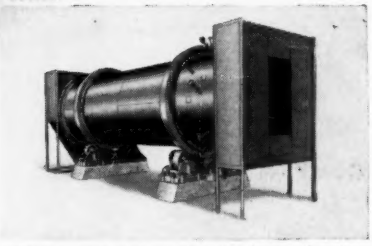
"Davenport" 3' - 6" Dia. Rotary Water Tube Cooler.



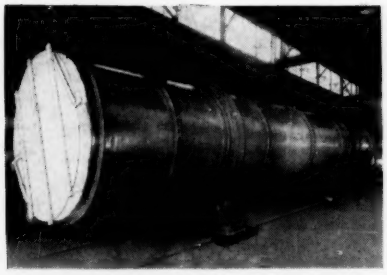
"Davenport" Rotary Steam Tube Dryer for drying soybean flakes.



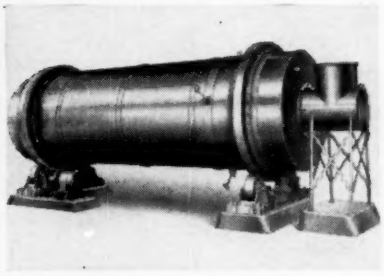
"Davenport" Rotary Hot Air Dryer drying whey powder, a by product from the manufacture of cheese.



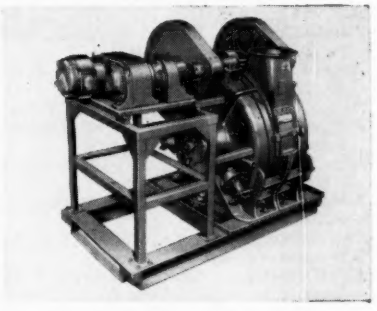
"Davenport" Rotary Hot Air Dryer for drying wheat gluten.



"Davenport" Rotary Hot Air Dryer fabricated from stainless steel for drying Adipic Acid.



"Davenport" Rotary Cooler fabricated from aluminum, for cooling molten alum.



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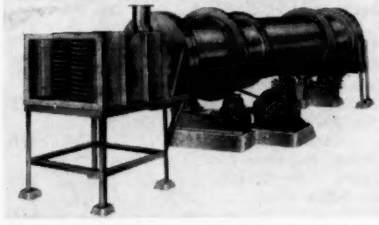
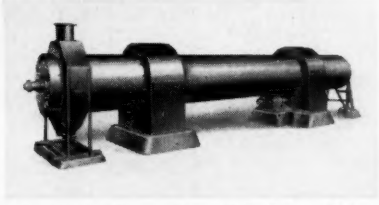
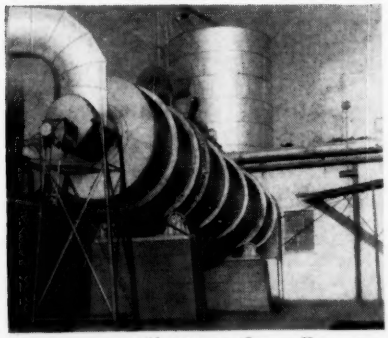


"Davenport" Rotary Hot Air Dryer for drying heat sensitive materials.

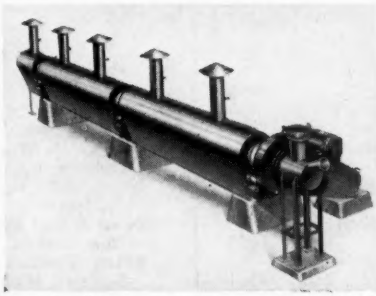


"Davenport" Rotary Steam Tube Dryer, drying sodium and potassium perchlorates.

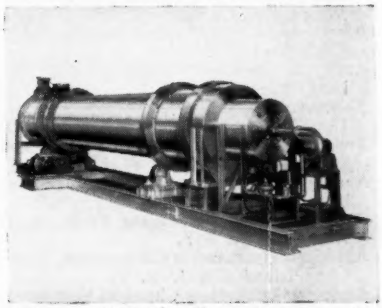
"Davenport" Double Drum Atmospheric Dryers drying yeast made from paper mill waste.



"Davenport" Rotary Air Cooler cooling soybean meal from a solvent extraction process.



Special "Davenport" Rotary Indirect Fired Dryer fabricated of special stainless steel using natural gas as heating medium.



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If you have a De-Watering — Drying or Cooling problem, our experienced engineers with our pilot plant can assist you with your problems. For quick reference, see Chemical Engineering 1957 catalog, or write for our Catalog B.

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Coliseum, New York, N. Y., Dec. 2-6, 1957

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Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa. 569
Allen-Sherman-Hoff Co., The, 259 E. Lancaster Ave., Wynnewood, Pa. 1359
Allied Chemical & Dye Corporation, 61 Broadway, New York 6, N. Y. Divisions: Barrett, General Chemical, National Aniline, Nitrogen, Semet-Solvay, Solvay Process, International 955, 957, 959 1439
Allis-Chalmers Manufacturing Company, P. O. Box 512, Milwaukee 1, Wisconsin; Industries Group, West Allis Works, Milwaukee 1, Wisconsin; Buda Division, 154th and Commercial Ave., Harvey, Ill. 636
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Aluminum Company of America, 1501 Alcoa Bldg., Mellon Square, Pittsburgh, Pa. 559
American Air Filter Company, Inc., 215 Central Ave., Louisville 8, Ky. 676
American Chemical Society, 1155 16th St., NW, Washington 6, D. C. 406
American Chemical Society News Service, 2 Park Ave., New York 16, N. Y. 410
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American Gas Furnace Company, 140 Spring St. Elizabeth, N. J. 833
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Autoclave Engineers Sales Corp., 2930 W. 22nd St., Erie, Pa. 346
Automatic Switch Company, Hanover Rd., Florham Park, New Jersey 847
Automatic Timing and Controls, Inc., Philadelphia, Pa. 645
Automotive Rubber Company, Inc., 12550, Beech Road at P.M.R.R., Detroit 39, Mich. 1134, 1136

B

B-I-F Industries, Inc., 345 Harris Ave., Providence 1, R.I. 660
Babcock & Wilcox Company, The, Tubular Products Division, Beaver Falls, Pa. 1002, 1004, 1006
Bailey Meter Company, 1050 Ivanhoe Road, Cleveland 10, Ohio 45
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Beckman & Whitley Inc., Missile Products Div. 985 East San Carlos Ave., San Carlos, Calif.	1446
Bel-Art Products, 4917 Murphy Place, West New York, N. J.	1098
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Bennett Industries, Inc., U. S. Route 54, Peotone, Ill.	1393
Berger Manufacturing Division Republic Steel Corporation, Canton, Ohio	68
Bethlehem Apparatus Company, Inc., 890 Front St., Hellertown, Pa.	340
Biach Industries, Inc., 10 Indian Spring Road, Cranford, New Jersey	1253
Bird Machine Company, South Walpole, Mass.	685
Bishop & Co. Platinum Works, J, Malvern, Pa.	900, 902
Bishopric Products Company, The, 4413 Este Avenue, Cincinnati 32, Ohio	1378
Black Products Company, 135th St. & Calumet Avenue, Chicago 27, Ill.	1319
Black, Sivalls & Bryson, Inc., 7500 East 12th St., Kansas 26, Mo.	669
Blaw-Knox Company, 300 Sixth Avenue, Pittsburgh 22, Pennslyvania	581
Blickman, Inc., S, 536 Gregory Avenue, Weehawken, New Jersey	325
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California Pellet Mill Company, 1114 E. Wabash Ave., Crawfordsville, Ind.	1358, 1360
Callery Chemical Company, 900 Perry Highway, Pittsburgh 37, Pa.	918, 920
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Colonial Rubber Company, Oakwood St., Ravenna, Ohio	111
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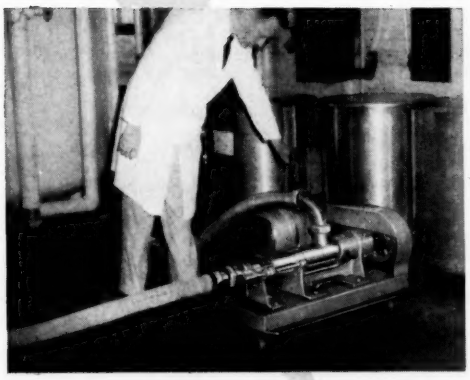

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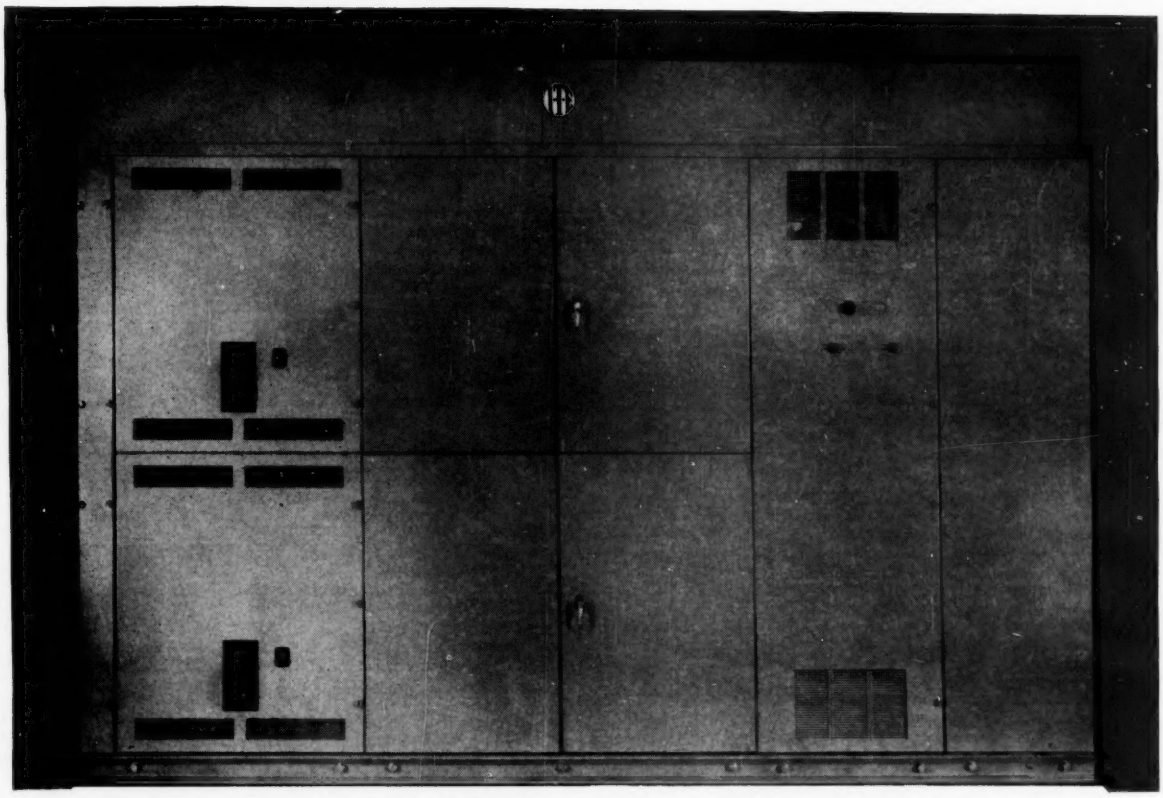

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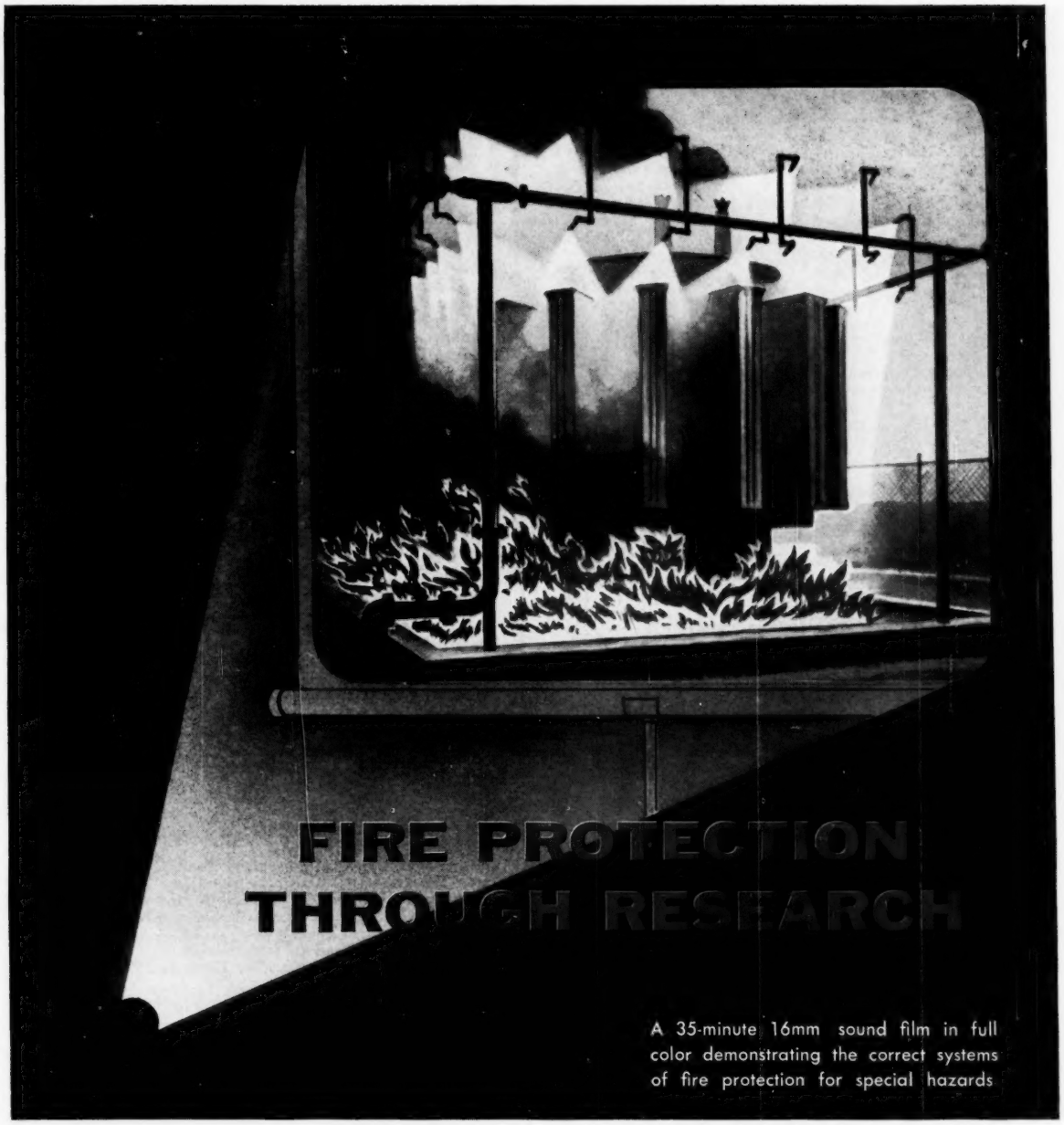

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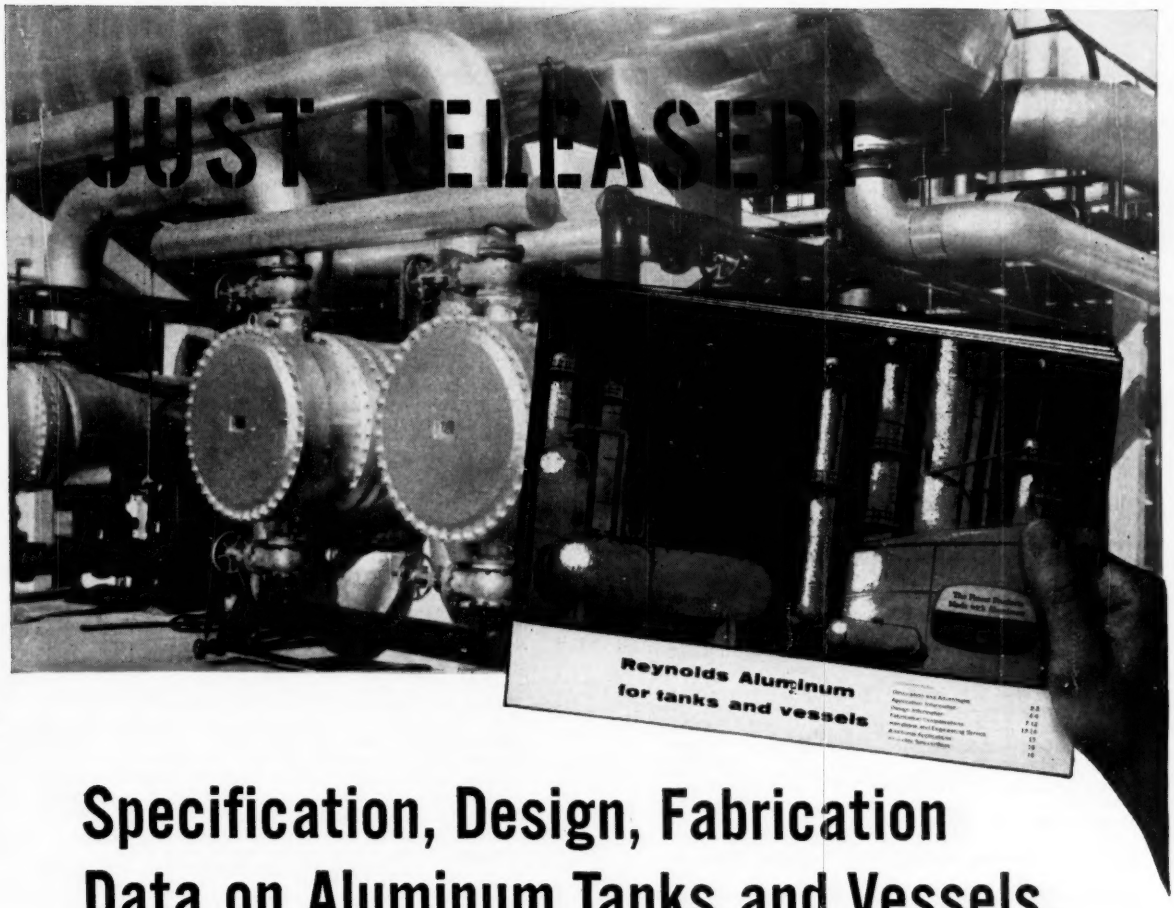

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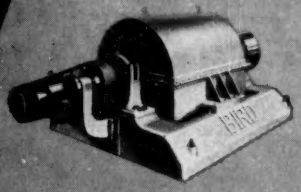

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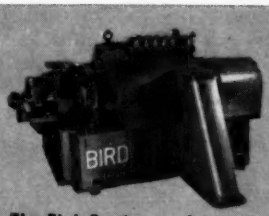

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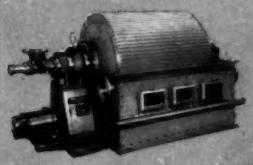
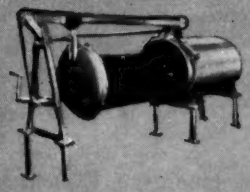


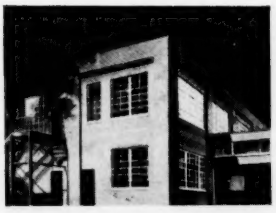
The Bird-Young Continuous Rotary Single Cell Vacuum Filter
for maximum capacity per foot of filter area, complete dewatering and washing and truly effective discharge of filter cakes even when exceedingly thin.



The Bird Horizontal Tank Vertical Leaf Pressure Filter
for large volume, low cost liquid clarifications. Filter areas from 10 to 1500 sq. ft.

The Bird Suspended Batch Centrifugal
for heavy duty, high capacity separations of clarifications; 26", 40" or 48" perforate or imperforate baskets; fume-tight, if needed; available in standard models or custom built for special applications.

The Bird-Humboldt Oscillating Screen Centrifugal Dryer
for dewatering of coarse or granular solids; a new and advanced design that assures extra long screen life and extra low power cost.



THE BIRD RESEARCH AND DEVELOPMENT CENTER
is a completely equipped test plant devoted to solids-liquids separation test work. It is *yours to use.* Bulletins describing any or all of the above items will be mailed on request.

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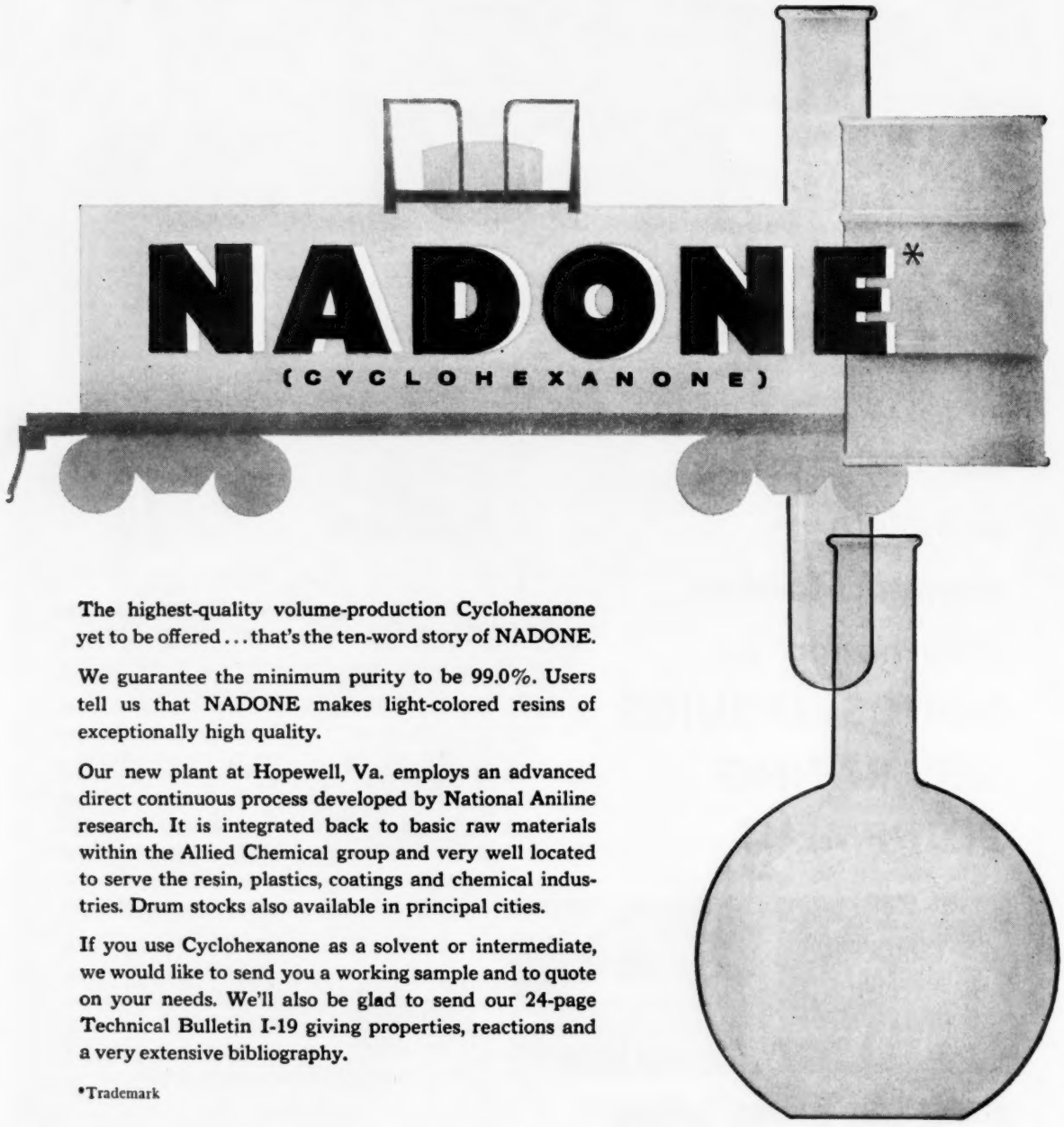

The highest-quality volume-production Cyclohexanone yet to be offered . . . that's the ten-word story of NADONE.

We guarantee the minimum purity to be 99.0%. Users tell us that NADONE makes light-colored resins of exceptionally high quality.

Our new plant at Hopewell, Va. employs an advanced direct continuous process developed by National Aniline research. It is integrated back to basic raw materials within the Allied Chemical group and very well located to serve the resin, plastics, coatings and chemical industries. Drum stocks also available in principal cities.

If you use Cyclohexanone as a solvent or intermediate, we would like to send you a working sample and to quote on your needs. We'll also be glad to send our 24-page Technical Bulletin I-19 giving properties, reactions and a very extensive bibliography.

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FINAL
CHEMSHOW
COVERAGE

Chemshow Highlights New Equipment

With the opening next week of the 26th Exposition of Chemical Industries, New York's Coliseum will become the rallying point for an estimated 35,000-40,000 chemical executives, engineers and chemists from all parts of the U.S. and dozens of foreign countries. What you'll find there is the biggest assortment of chemical products, equipment and instrumentation ever assembled for this stellar biennial attraction.

Tangible evidence of the Chemical Process Industries' dynamic growth will be displayed in more than 650 exhibits spread throughout all four exhibit floors of the coliseum. And, as always, the Chemshow is certain to have something for everyone—regardless of their special field of interest. Some of the new things exhibited:

New Chemicals and Derivatives: For the first time at a Chemshow, most chemical products will be grouped, on the third floor of the coliseum, in one of three separate display sections (the others: Laboratory Equipment, second floor; Rocket and Satellite Section, fourth floor). One of the newest product lines on display will be Callery Chemical Co.'s amine boranes, soon to be available in bulk for use as antioxidants, catalysts, stabilizing and biological agents. Sharing the spotlight will be Callery's trimethoxyboroxine ((TMB, for short)—a metal-fire extinguishant for smothering magnesium, titanium and zirconium fires.

Dow Chemical Co.'s Magnesium Dept. will feature an exhibit of magnesium suspensions. Designed for such new process uses as production of high-energy fuels and organometallic compounds, and reduction of high-purity titanium, beryllium, zirconium and uranium metals, they're made in 20-mesh to 0.1-micron sizes. Also on display: Ansul Chemical Co.'s new nitrogen heterocyclic products; American Hydrotherm Corp.'s broad-range (0-670 F) aryl silicate heat transfer media; eight recent additions to Victor Chemical Works' line of phosphorus-containing compounds.

Metals and Construction Materials: The CPI's reward for its intensive efforts in the development of new metals (*see p. 47A*) and plastics will be readily evident in the form of numerous items now offered in most of these new materials. Columbia-National Corp. will show off, for the first time, zirconium sponge, ingots and mill and finished products now available in commercial quantity. And at the Carborundum Metals Co. booth, you'll see the first heat exchanger, valve, reaction vessel and thermowell of all-zirconium construction.

To prove the corrosion resistance of titanium, Mallory-Sharon Titanium Corp. will demonstrate the ability of titanium pump shafts to withstand attack by ferric chloride solutions that cause other metals to fail in minutes. And if you're looking for unusual, special-purpose metals, you can find high-purity gallium (used for gallium arsenide semiconductors) at Alcoa's booth, capacitor-grade tantalum and newly developed 99.5% columbium metal at the display of Kennametal, Inc.

The more conventional metals will

also be well represented at the Chemshow both in standard stock forms and in fabricated equipment. And for show visitors who think they know the standard answers to corrosion problems, International Nickel Co. will provide a push-button quiz machine to test their skill at selecting alloys.

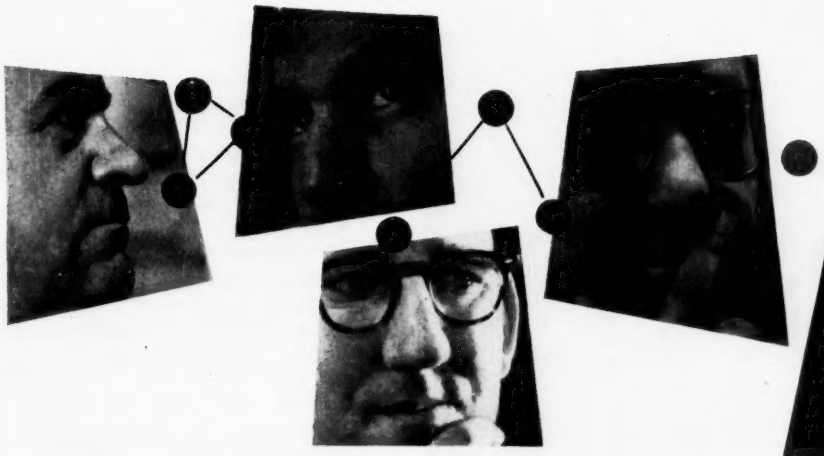
Among the newest applications of plastic materials will be Ethylene Chemical Corp.'s Chemipipe—a new line of Teflon-lined steel pipe and fittings making its public debut at the Chemshow. The growing use of the hard plastics as materials of construction will be highlighted by a number of unusual examples. Luzerne Rubber Co., for one, will show off several intricate parts custom-molded of PVC, including a 15-lb. molding that, it claims, is the largest ever made.

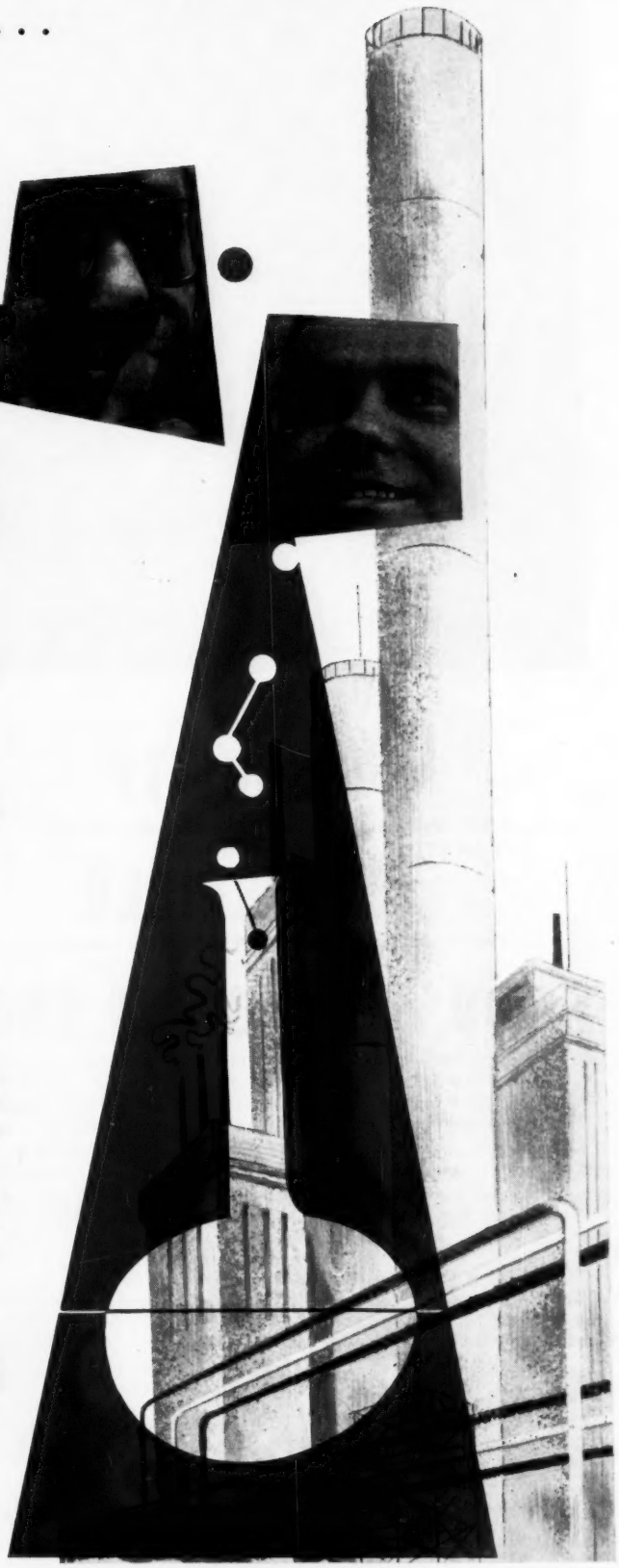
Instruments, Laboratory Equipment: Of the hundreds of instruments on view in the coliseum, several that are sure to attract many visitors are the gas chromatagraphs developed in the two years since the last Chemshow. Perkin Elmer, for example, will be showing its recently unveiled process vapor fractometer designed for on-stream analysis of chemical and petrochemical products. Representing Podbielniak's chromatographic equipment at the show will be two operating Chromanettes. Made in lightweight portable models for field use and on-the-spot testing, these units span the boiling-point range from —180 C to 80 C, are said to have separation efficiencies of better than 8,000 plates.

Applied Research Laboratories' newest offering in the continuous-analyzer line is Quantrol—a system that employs X-ray fluorescence to continuously monitor a single element in a process stream. Other new continuous processing aids: Norcross Corp.'s pipeline viscometer, which automatically records viscosity changes during polymerization or other types of reactions; Brabender Corp.'s ultra-rapid moisture recorder, which automatically checks material every 12 minutes for optimum moisture control.

Equipment: Far outnumbering all other exhibits at the Chemshow will be thousands of equipment items—ranging from the smallest valves and fittings to large completely integrated processing units. Biggest unit expected at the show will be a 3x16-ft. rotary dryer—the smallest size made by

more and more minds agree . . .





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MODERN FATTY ACIDS

as prepared by WILSON-MARTIN set a new standard of excellence never before achieved!"

So state the many chemists, production managers and technicians who express complete satisfaction with Wilson-Martin's new, modern quality.

Perhaps your product can undergo a rebirth in quality by using WILMAR 130 the lightest colored Oleic Acid ever offered —or by using WILMAR 255 the lightest and most color stable cosmetic type Stearic Acid available today.

These are only two examples of many striking quality firsts shown in A NEW SLIDE GUIDE TO MODERN FATTY ACIDS.

Better send for your copy of this handy, up-to-date technical reference today.

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Chemshow Highlights

Standard Steel Corp. (Los Angeles).

In addition to the standard equipment systems and components that never cease to appeal to mechanically minded show-goers, many new units will be on public display for the first time. Among the latter are three—(1) a Pulvocron air-attrition pulverizer, (2) the Turbulizer dispersion mill, (3) a new triple-action mixer—designed especially for the process industries by The Strong-Scott Mfg. Co.

The Sharples Corp. will also introduce three new units—all high-speed centrifuges designed to meet the growing demand for high-pressure, high-temperature operation.

National Engineering Co. will show its new Elevayor, an elevator-aerator for quick discharge and carry-away of material from all sizes of Simpson Mix-Mullers. Another operating elevating-conveying system —Link-Belt's Bulk-Flo—will be featured in a materials-handling display of oscillating and screw conveyors. One of the screw conveyors will recycle material to a "see-through" Roto-Louvre Dryer.

Other firms that will use working models as attention-getters are Combustion Engineering, with a flash drying system; General American Transportation, with a continuous fluidized-bed dryer for heat-sensitive materials and a scale-model Airslide car. Fluor Products Co. will demonstrate an air classifying system made by Fluor-Hartmann under a recent licensing agreement with Machinenfabrik Hartmann AG. (Germany).

Another see-through display, Peabody Engineering Corp's. plastic model of its newest industrial scrubber, will demonstrate improved removal of fine fumes and submicron dust from gas streams. Also in the scrubber class: Ducon's Type UW-4 Dynamic air scrubber, which will be on display for the first time.

Rockets and Satellites: And there's visual evidence of the CPI's sizable stake in the rocket field. Thiokol will exhibit some of the newest rocket engines; Atlantic Research Corp. will show PET—a small solid-propellent rocket, recently made available for industrial application; GE's Missile and Ordnance Systems Dept. will display such auxilliary equipment as fluid-stabilized arcs, solar furnace and gas-heated shock tunnel.

Now "Dutch Boy" gellant research is helping improve latex paints

Today, latex paints are booming.

Interior types are moving fast. Exterior types are being developed now to repeat this success.

A product of "Dutch Boy" gellant research . . . "Dutch Boy" BEN-A-GEL® . . . is making unique contributions to *both*.

In inside latex paints, "Dutch Boy" BEN-A-GEL steps up color, hiding power, durability, easy stain removal and prevents water spotting.

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Together with BEN-A-GEL, the BENTONE®S—also products of "Dutch Boy" gellant research—are aiding new developments in cosmetics, insecticides, heavy-duty lubricants, inks, many related products. Even ceramics.

And "Dutch Boy" produces many stabilizers that do the same in vinyl plastic products.

For more information on the "Dutch Boy" Chemicals mentioned, mail the coupon below. For technical assistance in their application, write.

Buy *Dutch Boy*® **CHEMICALS**

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No embrittlement! Lowest cost! ASME Code approved!

In the subzero operating range . . . Specify Alcoa Aluminum equipment and piping

The flow chart details a tonnage oxygen plant now in actual operation where process temperatures average below minus 300° F. Notice that virtually all of the equipment and process piping are ALCOA® Aluminum. There's a good reason: aluminum is the lowest cost metal able to perform satisfactorily at low temperatures.

At subzero temperatures, ASME code approved aluminum alloys suitable for welded construction display improved yield and tensile strengths with no reduction in ductility or resistance to shock loading (see graphs). There is no embrittlement!

And in these operating temperature ranges, aluminum offers other valuable benefits . . . light weight . . . excellent resistance to corrosion . . . great strength in alloys . . . high thermal conductivity . . . nonmagnetic, nonsparking characteristics . . . nontoxicity . . . and excellent reflectivity. It is highly workable and lends itself readily to a variety of welding or brazing techniques for easy fabrication.

When *you* are looking for a low cost answer to the many problems of satisfactory equipment and piping performance in low temperature operations, *it will pay you to specify Alcoa Aluminum.* ALCOA engineers have worked with aluminum in the process industries for over 30 years. Use their accumulated knowledge to help you find satisfactory answers to *your* process equipment problems. Consult the nearby ALCOA sales office listed in the Yellow Pages of your telephone directory . . . or outline your equipment requirements in a letter to ALUMINUM COMPANY OF AMERICA, 906-L Alcoa Building, Pittsburgh 19, Pa.

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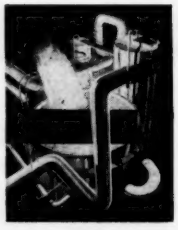
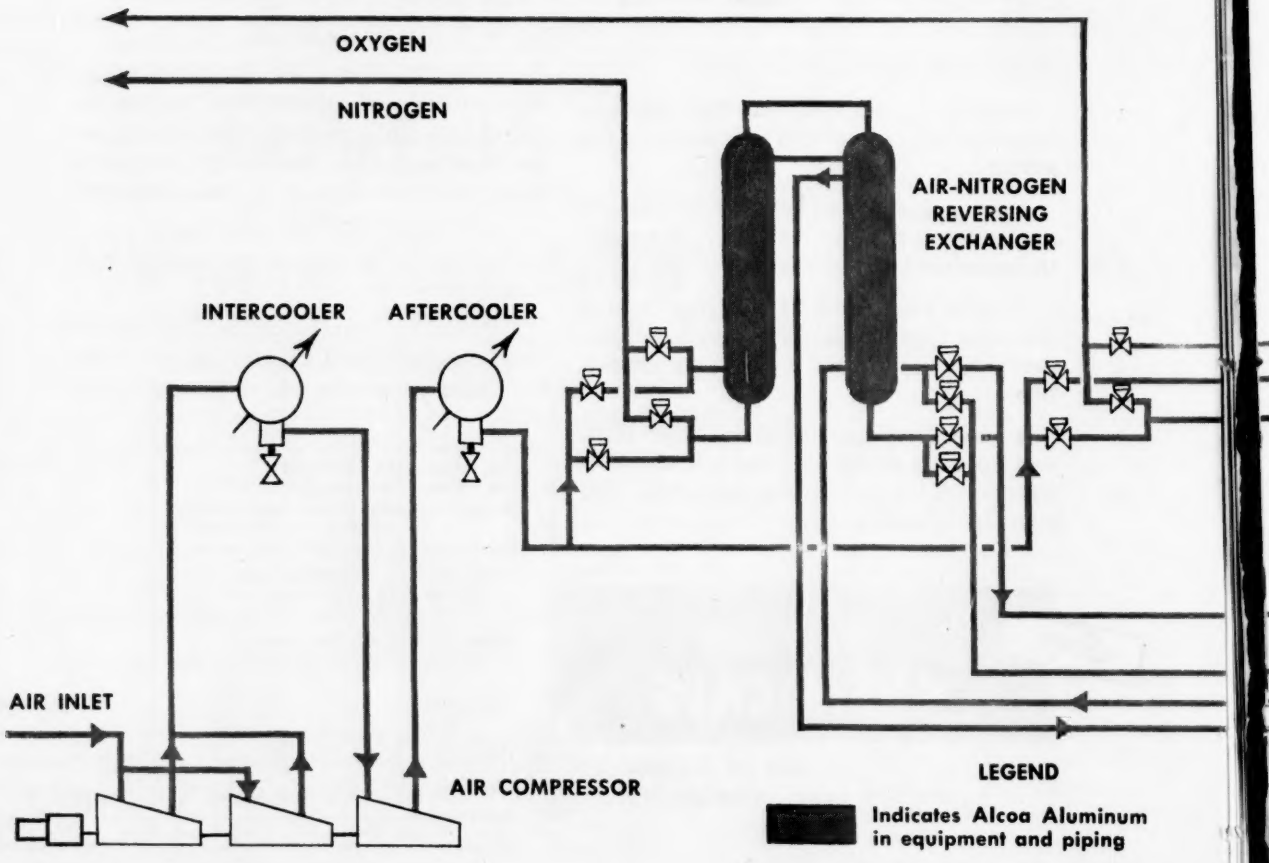
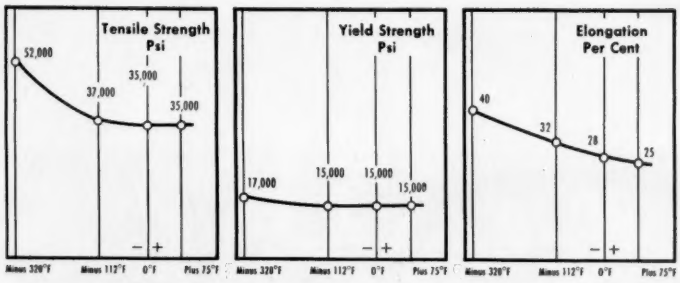
"ALCOA THEATRE"
Exciting Adventure
ALTERNATE MONDAY EVENINGS

ALCOA ALUMINUM



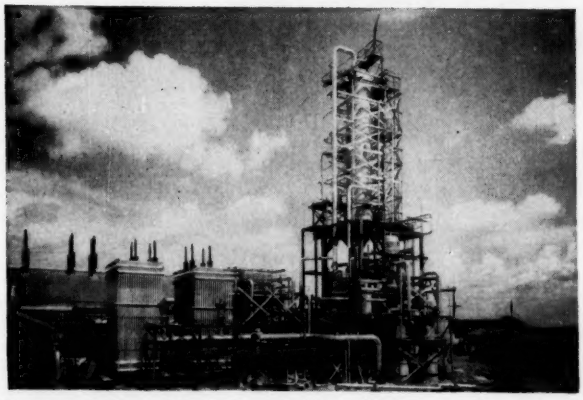
THIS FREE BOOK is filled with detailed data on the behavior of aluminum in the process industries . . . the result of more than 30 years of Alcoa engineering experience with aluminum in a variety of applications in nearly every temperature range. Use it as your guide to trouble-free, corrosion-free process equipment and piping. Write today for *Process Industries Applications of Alcoa Aluminum.*





LOW TEMPERATURE PROPERTIES OF ALCOA ALLOY 5154-0

Alcoa Aluminum actually increases in strength with no loss in ductility as temperatures drop to minus 320°F and below. Alloy 5154-0, for example, improves 50% in tensile strength, over 13% in yield strength and approximately 60% in elongation.



Photograph shows installation of Alcoa Aluminum equipment and piping in oxygen plant detailed in flow diagram. Harp-type heat exchangers (left) are dip-brazed assemblies with thousands of fins for best heat transfer.

Diagram of first successful low pressure tonnage oxygen plant . . . designed to produce 175 tons of 95% oxygen per day for the manufacture of oxygenated chemicals. All of the process piping and most of the equipment are Alcoa Aluminum.

WE are pleased and honored to be in such distinguished company and to know that our chemical and metallurgical engineering achievement has made a worthwhile contribution to the extractive metallurgy of uranium and other nuclear materials.

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CHEMICAL • METALLURGICAL • MECHANICAL ENGINEERS

19 RECTOR STREET • NEW YORK 6, N. Y.

FOR 78 COMPANIES . . .

ATOM-AGE METALS SNARE THE AWARD

1957

Next Tuesday at New York's Waldorf-Astoria, 78 chemical process firms, engineering organizations and laboratories will receive Chemical Engineering's 14th award for chemical engineering achievements. The award this year is well-deserved recognition of the accomplishments in atomic age metallurgy of some 1,800 chemical engineers, whose collective effort has made possible the construction of almost $4 billion worth of new plants.

BACK around the turn of the century when William Walker and his partner, Arthur Little, were originating ideas that would later be formalized into the unit operations concept, the infant chemical engineering profession was drawing heavily for its know-how on the field of extractive metallurgy. In fact, many of the present-day unit operations—crushing and grinding, flotation and sedimentation—can trace their lineage directly to the primitive techniques of the 16th century metallurgists.

Now, in its 50th year as an organized profession, chemical engineering is repaying the debt, giving the metallurgist a whole new bag of tricks. Solvent extraction, chemical precipitation, ion exchange, chromoto-

1957 AWARD WINNERS

Allied Chemical & Dye Corp.
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American Cyanamid Co.
American Potash & Chemical Co.
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Brookhaven National Laboratory
Brush Beryllium Co.
Callery Chemical Co.
Carborundum Metals Co., The
Catalytic Construction Co.
Chemical Construction Corp.
Climax Uranium Co.
Columbia-National Corp.
Columbia-Southern Chemical Corp.
Crane Co.
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Dow Chemical Co., The
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Fansteel Metallurgical Corp.
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Goodyear Atomic Corp. (Div. The Goodyear Tire and Rubber Co.)
W. R. Grace Co.
Harshaw Chemical Co., The
Hooker Electrochemical Co.
Horizons Incorporated
International Minerals & Chemical Corp.
International Nickel Co. of Canada, Ltd.
Kaiser Aluminum & Chemical Corp.
Kawecki Chemical Co.
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Oak Ridge Laboratories (of Union Carbide Nuclear Co.)
Olin Mathieson Chemical Corp.
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Phillips Petroleum Co.
Quebec Iron and Titanium Corp.
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U. S. Industrial Chemicals Div., National Distillers and Chemical Corp.
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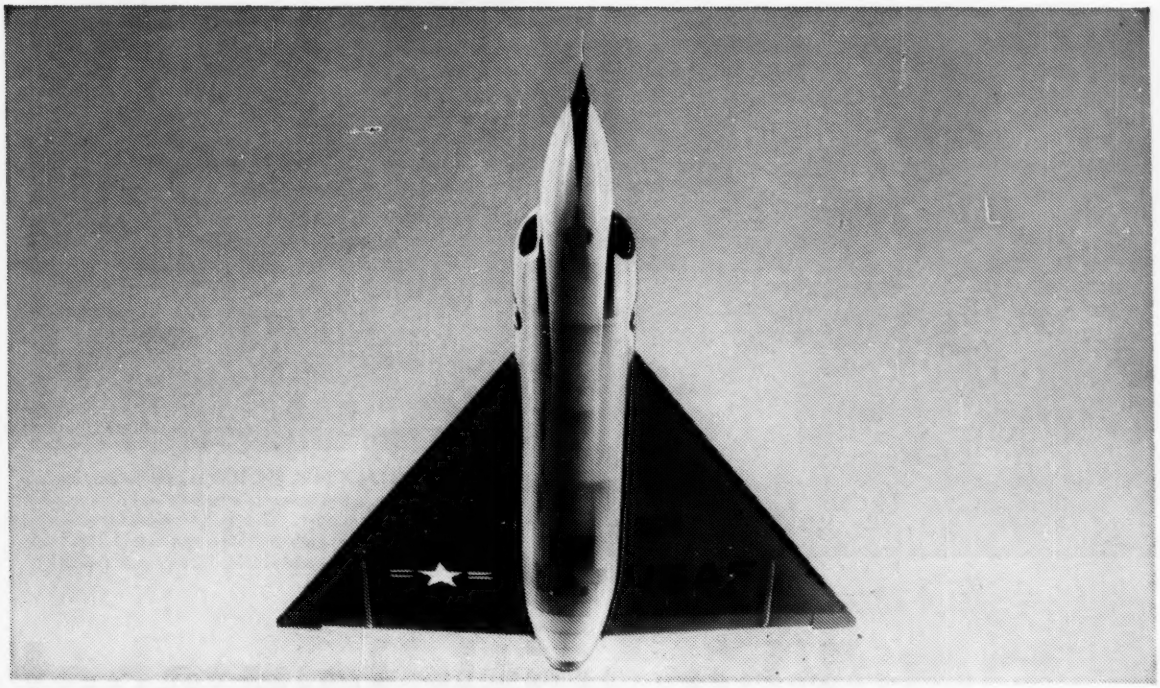
graphy, even gaseous diffusion, are playing an increasingly important role in winning metals from their ores. And, in recognition of that, *Chemical Engineering* magazine next week will present its Chemical Engineering Achievement Award to 78 organizations "for their pioneering applications of chemical engineering principles and processes to the extractive metallurgy of atomic age metals." Says Sidney Kirkpatrick, editorial director of *Chemical Engineering* (and CHEMICAL WEEK): "We are starting to pay off our historic debt to extractive metallurgy."

The award committee, made up of 90 senior chemical engineering educators, chose metals accomplishment by a near-unanimous vote. Citations included those for the so-called atomic metals: uranium, plutonium, zirconium, hafnium, tantalum, columbium, lithium, boron, beryllium, thorium and the rare-earth metals. And because they are primarily products of chemical processing and important to the nuclear industry, three "older" metals were named: aluminum, nickel and titanium.

The 78 organizations named in the award (*see list above*) report that approximately 1,800 chemical engineers took part in the developments. Almost $4 billion worth of plants were built as a result of their work in

when you need



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... they are available from Stauffer in truck or carload quantities. Boron for high-energy fuels and atomic reactors, silicon for transistors, titanium and boron for supersonic airplanes and guided missiles, all made from metal chlorides supplied by Stauffer.

Stauffer's unparalleled experience with modern techniques in the preparation of metal chlorides has been — continues to be — a major influence on the available quantity, increasing purity and decreasing cost of the sources of these important metals.

For the Trichlorides of Aluminum, Antimony, Boron and Titanium; for the Tetrachlorides of Silicon, Titanium and Zirconium; and for Antimony Pentachloride...

Stauffer is a MAJOR source of supply

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Since 1885 Stauffer Chemical Company has provided American Industry and Agriculture with a growing stream of chemicals... to keep pace with the requirements of expanding basic industries such as steel, petroleum, rubber, glass and paper ...to meet the needs of new industries such as synthetic fibers and plastics... and to satisfy the demands of scientific farming for new and effective agricultural chemicals.

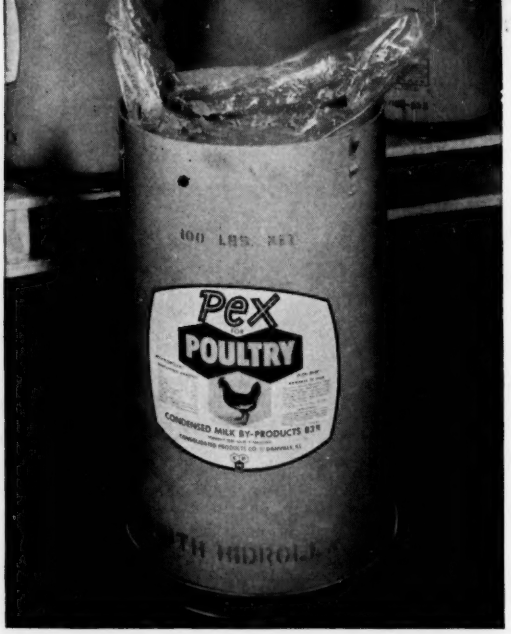
Because of basic work in developing the technology of producing metal chlorides, Stauffer Chemical Company has been recognized by

CHEMICAL ENGINEERING'S "Achievement Award"

for accomplishments in Extractive Metallurgy

Stauffer CHEMICALS SINCE 1885

ANTIBIOTICS are packaged in double polyethylene bags, with inside bag and inner wall of outside bag completely sterile. Polyethylene packaging eliminated fragile containers, cut storage ⅝, freight cost ⅓.



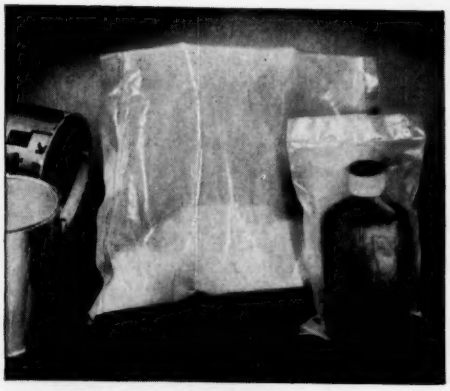
POULTRY FEED receives maximum protection in polyethylene bag and lightweight fiber container. The polyethylene bag safeguards the high moisture content of the feed on the inside and shields it from contamination on the outside.

ship with low-cost

SKIN CLEANSER is protected from air and moisture by this unsupported film bag that remains unaffected by cleansing agents. Label and directions are clearly printed.

ANIMAL FEED packaging in corrugated box costs only ⅓ as much as in can formerly used. Polyethylene film liner has eliminated mold and slashed container weight.

PHOSPHORIC ACID has an inexpensive and safe container in this iron drum with a polyethylene liner. The polyethylene liner has saved thousands of dollars in inventory since the same drum can be converted quickly to ship many different types of chemicals simply by changing the liner.



DENTAL PLASTIC in film bags, sealed in cardboard canisters, stays useful for three years even in tropic dampness. Air shipment pressure won't burst bags.

PLANT FOOD in polyethylene bag and metal can illustrates how small shipments obtain maximum moisture protection and long shelf life at low cost. Polyethylene bag also prevents chemical reaction between product and metal can.

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Cut packaging costs for liquids and solids with lightweight boxes, drums, cans, and bags

Sales up... profits down? Fight the squeeze by improving your packaging efficiency. Protect both profit and product with low-cost film made from BAKELITE Brand Polyethylene. Polyethylene film assures maximum protection on the inside and permits the use of less expensive packaging containers on the outside. And too, more convenient and efficient packaging not only cuts costs but it also builds easier customer acceptance for extra sales.

PROVEN PROTECTION FOR COUNTLESS PRODUCTS... Your product's purity is safe. Film bags and liners made from BAKELITE Brand Polyethylene can be used in contact with most chemicals because it is highly inert. It is impervious to moisture and immune to fungus attack. It is also strong, flexible and easy to use. It takes a quick, secure heat seal even when the film is dust covered.

Ask your packaging supplier about shipping with low cost film made from BAKELITE Brand Polyethylene. Or write Dept. AJ-34 for the names of specialists in polyethylene bags and liners.

IT PAYS TO PACKAGE IN FILM MADE OF...

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C E Award

process development, design and construction. It adds up to a market for chemical products and processing equipment of close to $500 million a year. The processing of 200 million tons/year of nonferrous metal ore means a $60-65 million annual market for chemicals alone, according to an independent estimate.

Half for Uranium: More than half the organizations in the prize-winning group were cited for contributions in uranium ore processing. Principal chemical engineering contributions, in order of commercial development: chemical precipitation, column ion exchange, resin-in-pulp ion exchange for slimy ores, and liquid-liquid extractions using organic solvents.

Ion-exchange and solvent extraction together are today responsible for 80% of the non-Communist nations' production of uranium. Their adaptation to the job has slashed the normal ore processing cost in half, a saving that's measured in hundreds of millions of dollars/year.

But though uranium got the most mentions, the award committee did not overlook the part that chemical engineering played in the development of other materials used in the nuclear energy program, such as zirconium, hafnium, columbium and thorium. Nor did it forget that the development of materials such as lithium and boron has added new dimensions to the nation's high-energy fuels program or that the whole field of metal development is making possible the production of new materials of construction to stand up under the rigorous conditions met in the missiles and other fields.

By including aluminum in the citations, the committee is recognizing that chemical processing techniques for metal production were first applied to that metal. Up to the time that aluminum was developed, the accepted procedure had been to separate the ore into an impure metal and a slag that would frequently be valuable. Aluminum engineers, however, used chemical methods quantitatively to make a pure alumina from bauxite.

Chemical metallurgy has come a long way since then. Dr. Zay Jefferies, distinguished metallurgical engineer, will outline some of this progress when he delivers his keynote address at the award dinner next Tues-

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Regardless of the size or scope of your next project, the selection of the engineer-contractor remains a most critical decision. Pace setting projects provide one of the best proofs of the quality of creative resources and the extent of construction experience.

In offering a complete service that ranges from preliminary surveys, engineering and procurement to construction and initial operation, Blaw-Knox qualifications consistently meet the processing industry's most rigid requirements.

To see how this background can help your plans for process development, plant erection or modernization, contact our engineers for a preliminary discussion.

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1957 AWARD
CHEMICAL ENGINEERING ACHIEVEMENT

day at the Waldorf-Astoria. Title: "Chemical Engineering and Extractive Metallurgy—a Fruitful Partnership." And Jesse Johnson, director of the Atomic Energy Commission's raw materials division, who will accept the awards on behalf of all the honored organizations, foresees the further use of solvent-extraction techniques for other important metals.

There are indications that even the steel industry may find it profitable to apply more chemical engineering operations in the reduction of iron ore. Fluidized-bed techniques and the direct reduction of iron ore with hydrogen hold great promise for steelmakers.

Where Credit Is Due: By becoming the third group to receive the *Chemical Engineering* Achievement Award *(table, below)*, the 78 organizations find themselves in some high-stepping company. None of them will minimize the benefits that have accrued to chemistry from the metals field. But it bodes well for the future of metals that chemical engineers feel such a strong sense of obligation.

Previous Award Winners

YEAR	WINNER	ACHIEVEMENT
1933	Carbide and Carbon Chemicals	Synthetic chemicals from petroleum and natural gas
1935	Du Pont	Development of neoprene, synthetic camphor and other chemicals
1937	Monsanto	Elemental phosphorus
1939	Standard Oil Development	Aviation gasoline, other products from petroleum
1941	Dow	Magnesium from sea water
1943	67 Companies	Building a synthetic rubber industry in 24 months
1946	122 Companies	Atomic bomb project
1947	Merck	Streptomycin, other medicinals
1948	Shell Development	Synthetic glycerine
1948	Celanese	Chemical engineering integration of textile, plastics and chemical operations
1951	Phillips Petroleum	High-abrasion carbon blacks, cold rubber
1953	Carbide and Carbon Chemicals	Piloting high-pressure coal hydrogenation
1955	Dow Corning	Chemical engineering participation in commercial development of silicones

AT THE CHEM SHOW...

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OTHER DURCO EQUIPMENT

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BOOTH NO. 532 NEW YORK • DEC. 2 THRU DEC. 6

FINAL CHEMSHOW COVERAGE

New York—with or without a Chemshow—is a pretty big place. How to get the most out of both show and city in a limited time is easier if you know your way around. Here are a few tips about the show, New York Coliseum, transportation, hotels, restaurants and entertainment to get you started.

About the Chemshow—and New York

For thousands of the chemical industry's executives, engineers and chemists, the Chemshow at the New York Coliseum will overshadow all other events on New York City's calendar for next week. It will be the biggest Chemshow yet, and will mark the biennial event's return to New York after an absence for four years.

The first way to save time: remember the show's schedule. It will be open Tuesday, Wednesday and Friday from 10 a.m. to 6 p.m. The first day, Monday, Dec. 2, the show won't open till noon, but will remain open till 10 p.m. And on Thursday, the time is 10 a.m. to 10 p.m.

If you're lucky enough to be able to pick your day, experience shows that the first two days of the show draw the smallest crowds—so if you want to get around quickly, try to get there then. Thursday will probably be the busiest. And remember, by the end of the week most of the exhibitors will be weary from the long grind. So you'll probably get the most individual attention if you go early.

To the Coliseum: IRT Broadway-Seventh Ave. and Sixth and Eighth Ave. IND Independent subways (except E and F trains) stop right at the coliseum. The station: 59th St.-Columbus Circle. If you're staying at a west side hotel (e.g., Statler, Governor Clinton, McAlpin in Pennsylvania Station area, the new Manhattan and Astor in Times Square area) the subway route is probably best.

From the Grand Central Station, east side hotel area (e.g., Commodore, Roosevelt, Biltmore) the easiest public transportation route is the 42nd St. Surface Transportation System bus line. Bus marked "104 Broadway" stops right at the coliseum.

If you're staying at a Central Park area hotel (e.g., Park Sheraton, Essex House, Henry Hudson), the coliseum is only a short walk.

If you take a taxi, tell the driver you want to get out at Eighth Ave. and 58th St. The coliseum is just one block north, and you can probably save

About New York

yourself about five minutes since you avoid the usual traffic tie-up at Columbus Circle.

A reminder if you are driving in from New Jersey for the day: it's probably easier to leave your car in the Lincoln Tunnel parking lot, located at the junction of U. S. 1 and N. J. 3 and near the Jersey Turnpike's Lincoln Tunnel exit. Parking lot service includes round-trip bus ride to New York Port Authority Bus Terminal (a couple of minutes by subway from the coliseum). That way, you don't have to waste time looking for a spot to park in the city, can stay all day for the one price. Entire service costs $1 (29¢ extra per person). But be careful—the lot closes for a few hours early in the morning.

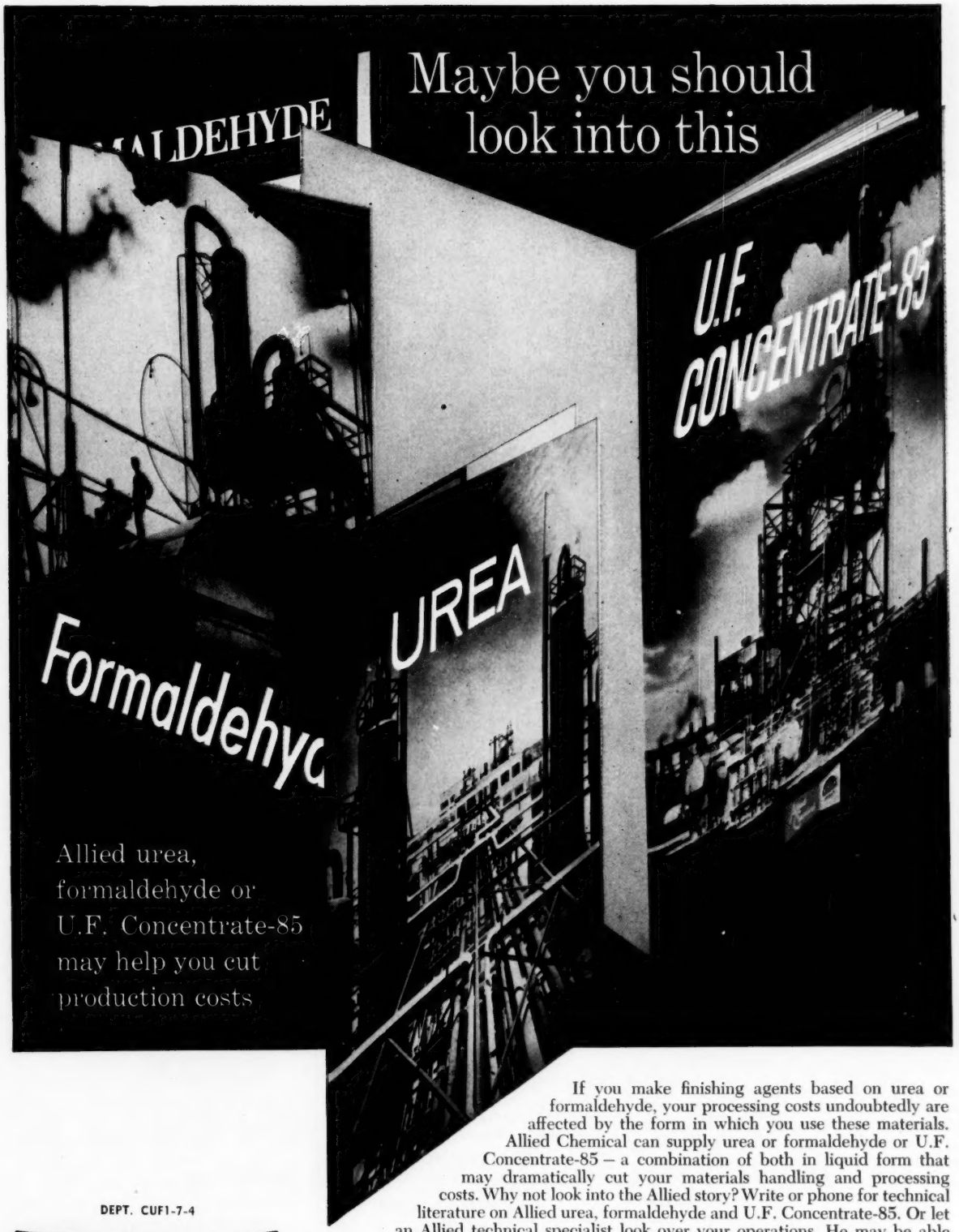
Extra-Curricular Activities: There'll be a lot to see and do in New York if you have time to spare. Theater tickets are available at the hotels. But you'll pay a brokers' fee (about $1.30 including tax) for tickets, and you're out of luck—if you don't already have reservations—for the Broadway shows, "My Fair Lady," "Auntie Mame," "Jamaica," "Time Remembered" or "West Side Story."

A few tickets are sometimes available for "Bells Are Ringing." And if you want to take a chance on a single seat or two, or don't mind standing, try the theater box offices.

Tickets for sports events, concerts, some of the lesser hit shows and "off-Broadway" theater are easier to get.

Most of the hotels have complete calendar of events available. And you can get free information about most anything in New York (e.g., events, hotels, shopping, maps, restaurants, sight-seeing) from the New York Convention and Visitors Bureau, Inc. (90 East 42nd St., across the street from Grand Central Station). Radio and television tickets are available free, on a first come, first serve basis. A new information center, run by the Dept. of Commerce and Public Events, opened last week, is located directly behind the Times Building in Times Square. *Cue* magazine and *The New Yorker* can also be helpful in this respect.

Sight-seeing tour information is available at hotels. The most complete tour, telescoped into the shortest time, is the boat trip around Manhattan Island. But it's touch-and-go as to whether the boats will still be running



If you make finishing agents based on urea or formaldehyde, your processing costs undoubtedly are affected by the form in which you use these materials. Allied Chemical can supply urea or formaldehyde or U.F. Concentrate-85 – a combination of both in liquid form that may dramatically cut your materials handling and processing costs. Why not look into the Allied story? Write or phone for technical literature on Allied urea, formaldehyde and U.F. Concentrate-85. Or let an Allied technical specialist look over your operations. He may be able to suggest simple modifications that will reduce your resin-making costs.

DEPT. CUF1-7-4

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About New York

in December—weather and demand are the factors.

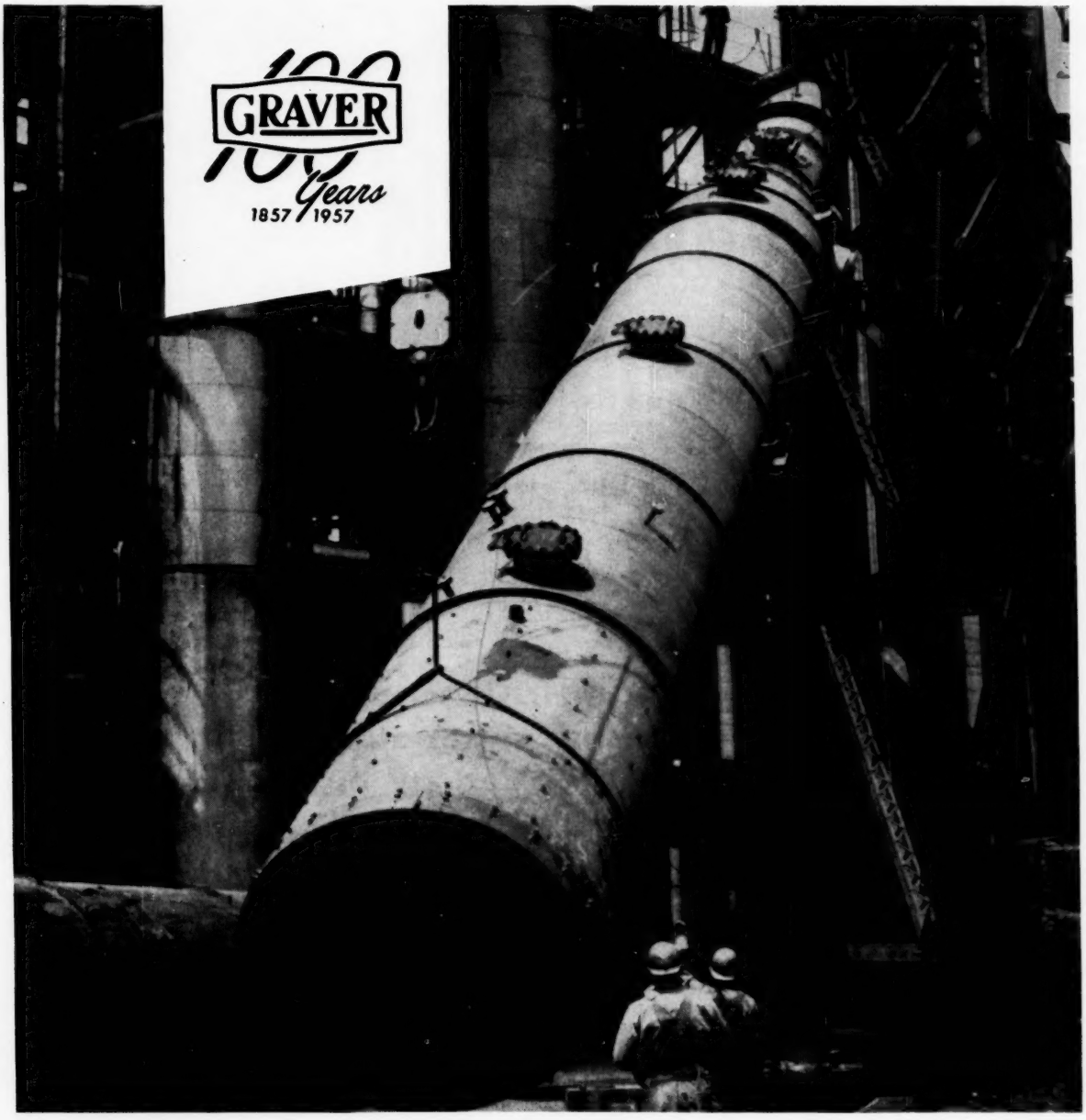
Coinciding Events: If you are interested in attending other events of significance to the chemical industry, keep these four in mind:

- Chemical Exposition Dinner of the New York Section of the American Chemical Society on Monday, Dec. 2 at the Henry Hudson Hotel. Speaker will be Walter G. Whitman, head of MIT's department of chemical engineering; topic: the effect of our atomic energy policy on chemistry and the chemical process industries. Refreshments: 6-7 p.m.; dinner: 7 p.m.; tickets: $7.50 each.
- 14th Biennial Chemical Engineering Achievement Award Dinner on Tuesday, Dec. 3 at the Waldorf-Astoria honoring 78 organizations for their contributions to the extractive metallurgy of atomic age metals. Zay Jefferies, former vice-president and general manager of the chemical department of General Electric Co., will deliver the keynote address. Walter Whitman will make the presentation. Reception at 7 p.m.; dinner at 8 p.m.; black tie. Tickets: $25 each, by reservation only.
- Annual meeting of the American Society of Mechanical Engineers at the Hotel Statler.
- Annual meeting of the American Rocket Society at the Hotel Statler.

For Dining: New York is noted for its number of restaurants serving quality food. If you can't make a selection from the visitors' bureaus', *Cue's* or *The New Yorker's* lists, "The Complete Guide to New York City" by Andrew Hepburn (American Travel Series, $1) is a book that includes a good list of 400 restaurants.

And remember, the coliseum has snack bars conveniently located on each floor, a cocktail lounge on the second mezzanine.

Travel Tips: If you are travelling a good distance (20 blocks or more) north or south, the subways are the best bet. Maps are available at some newsstands, visitors bureaus, and are posted in each subway car. Buses are convenient for short hops. It's tough to find public transportation for cross-town trips (buses run across 34th, 42nd, 49th and 50th Sts.). Sometimes it's best to walk, but the east-west blocks are about twice as long as north-south ones. Try to avoid rush-hour travel (7:30-9 a.m., 5-6 p. m.).



BIG GUN IN STAINLESS

Stainless steel so effectively turns the battle against corrosion that there is no question about the investment payout. To assure long life, Type 304 ELC stainless was selected for this 90′ stripper column. Shop-fabricated by Graver in two sections and field-welded into one unit, the column was random-radiographed and tested to pressures of 162 psi. and 246 psi. Graver's expertness in fabricating and welding stainless is always assurance of trouble-free service.

to turn the battle against corrosion!

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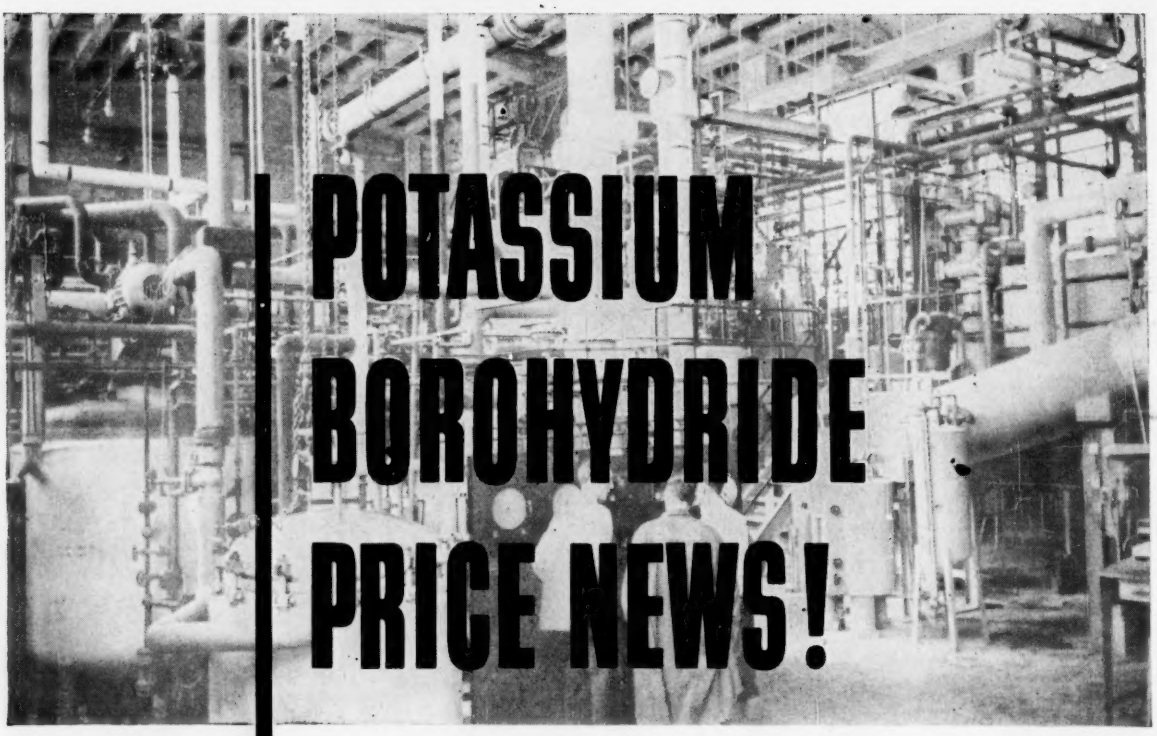


POTASSIUM BOROHYDRIDE PRICE NEWS!

New low MHI KBH_4 prices expand borohydride applications formerly blocked by high costs

Great news! MHI potassium borohydride (KBH_4) is now the lowest priced commercially available borohydride reducing agent. Where high price may have blocked use before, many companies now can profit from KBH_4 for faster, easier, higher yield specific reductions of esters, aldehydes, ketones, acid chlorides and acid anhydrides. New production techniques make these new prices possible.

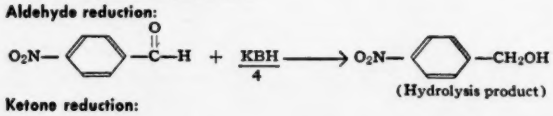
In addition to price advantage, there are many other factors which make MHI KBH_4 a uniquely versatile and useful reagent. MHI KBH_4 is selective. It goes straight to the heart of a specific reduction without side reactions, without affecting other reducible groups present and without attacking olefinic bonds. A white crystalline solid with a purity of 99% and density of 1.175 g/cc, MHI KBH_4 is stable and can be handled and stored safely in air without loss of purity. You can use it in conventional equipment employing standard techniques.

Solubility is 19.3 grams/100 grams water. Other solvents are water-methanol mixtures, in which solubility ranges from 13.0 grams/100 grams solvent for a ratio of 4 to 1 water-methanol solution down to 0.7 grams/100 grams solvent for methanol alone. MHI KBH_4 also dissolves in other water-alcohol mixtures and liquid ammonia. The solubility in dimethyl formamide is 1.2 grams/100 grams solvent and in dimethyl sulfoxide is 7.5 grams/100 grams solvent at 25°C. In general, solubility sharply decreases with higher alcohols and it is generally insoluble in ethers and hydrocarbons. It has a negative heat of solution in water of 6.3 Kcal/mol.

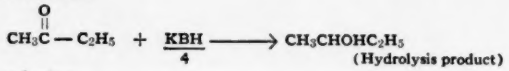
All of these unique advantages, plus the new low price make it a good move for you to use MHI KBH_4 for reactions like these:

TYPICAL ORGANIC REACTIONS:

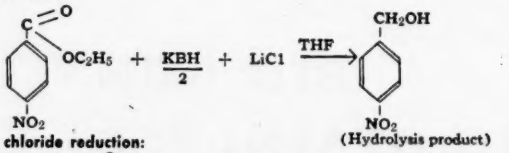
Aldehyde reduction:



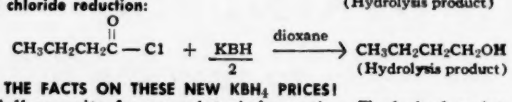
Ketone reduction:



Ester reduction:



Acid chloride reduction:



GET THE FACTS ON THESE NEW KBH_4 PRICES!

Call or write for complete information. Technical assistance is also available without obligation.

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FINAL CHEMSHOW COVERAGE

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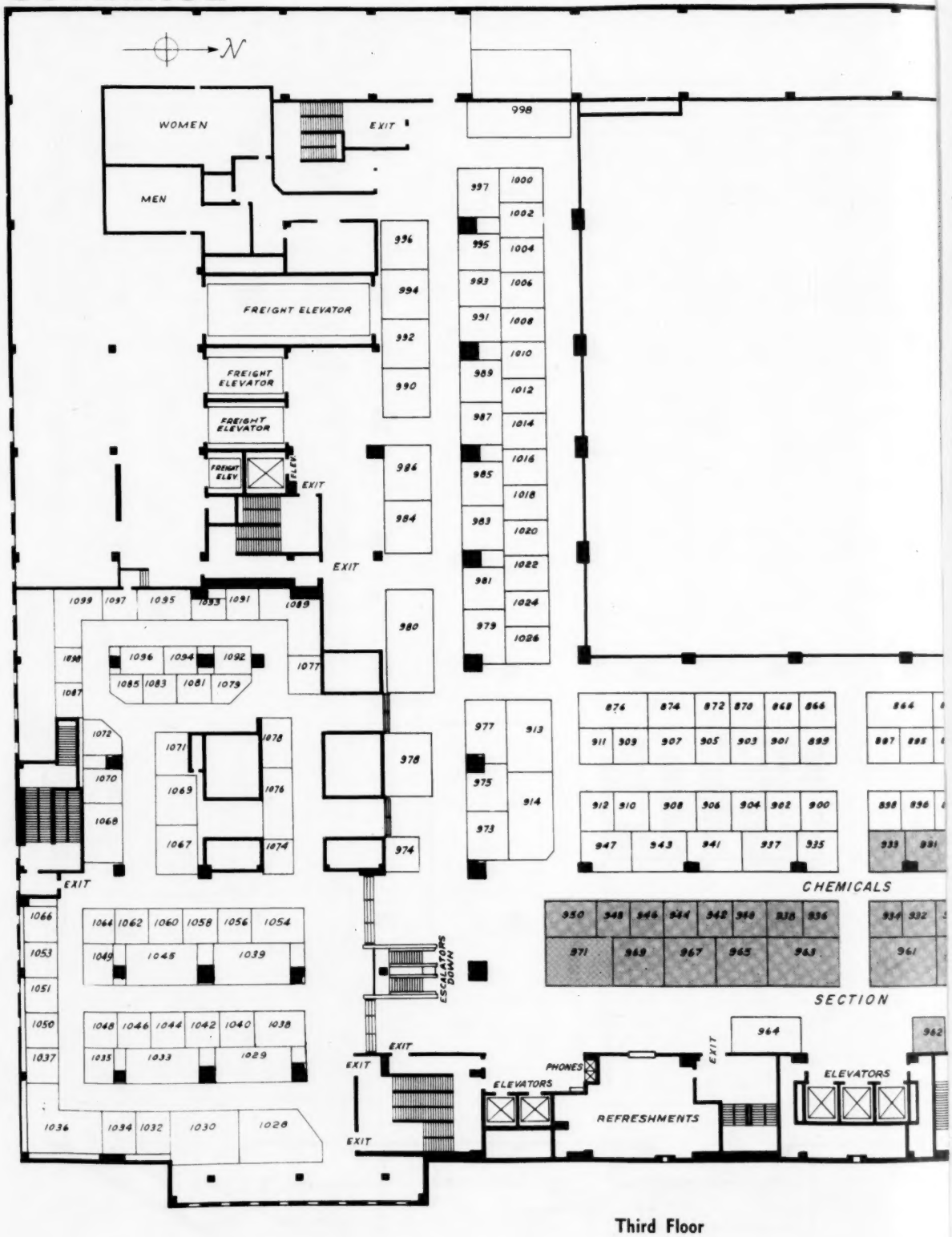

Third Floor

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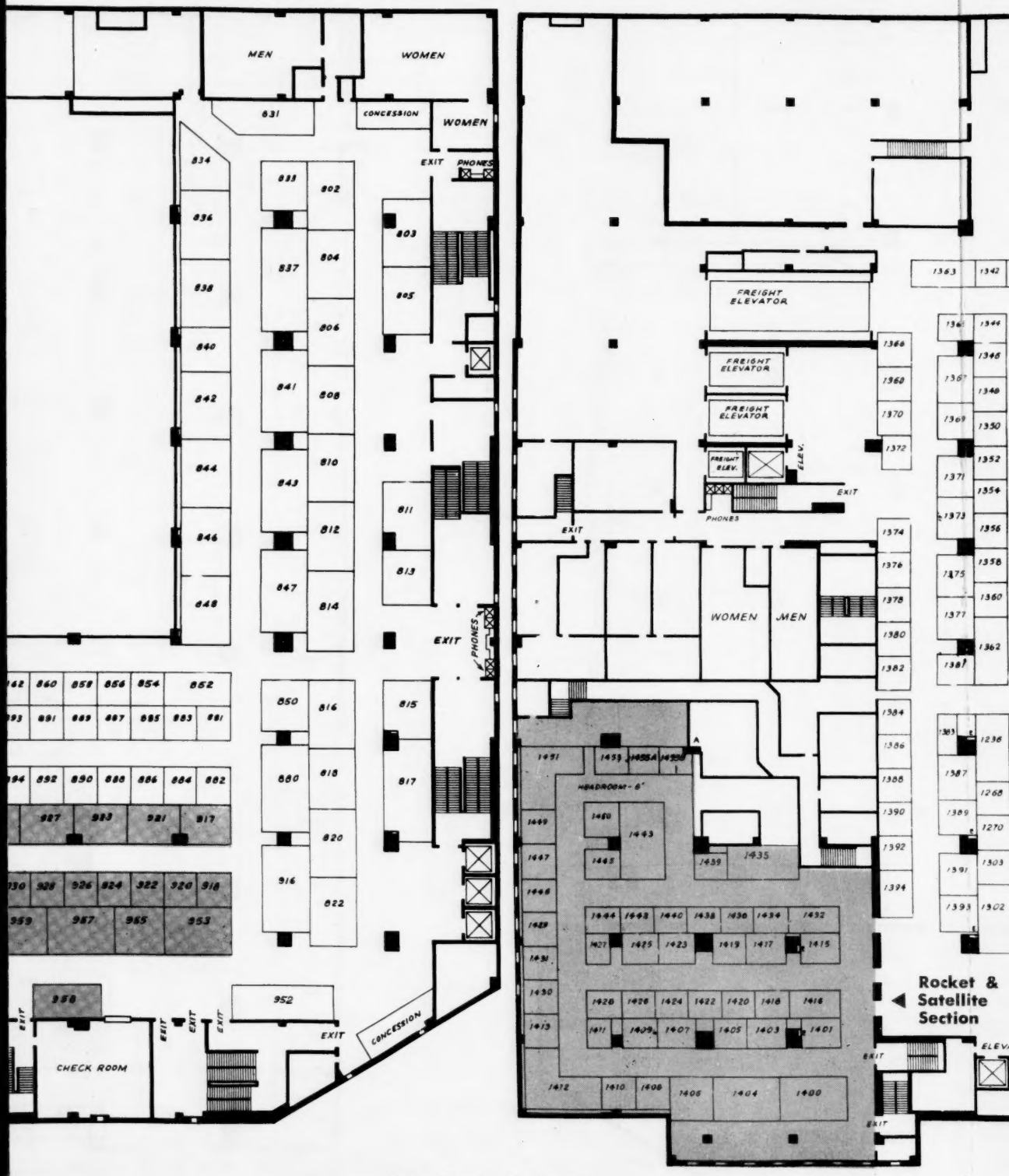

New York Coliseum

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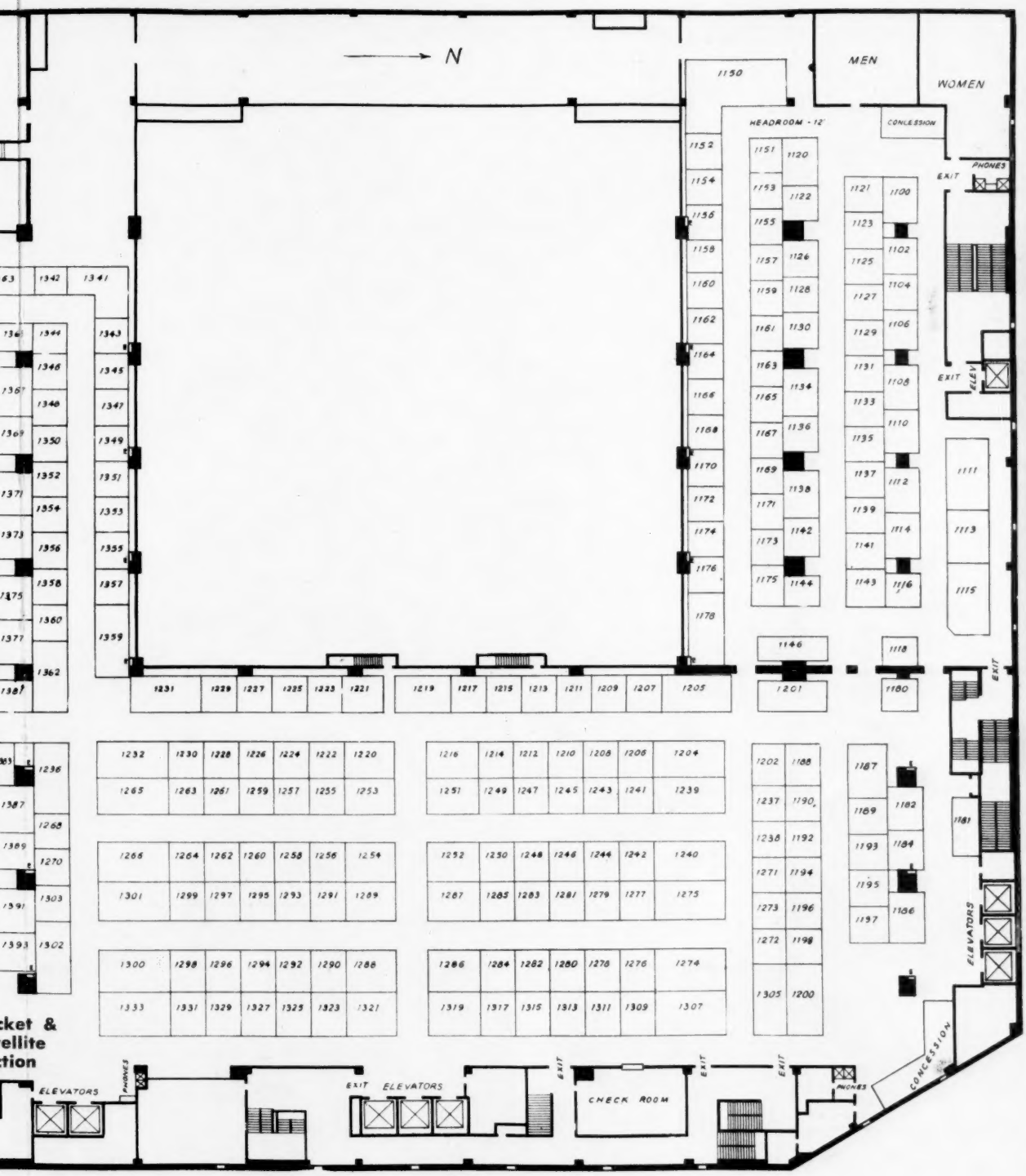
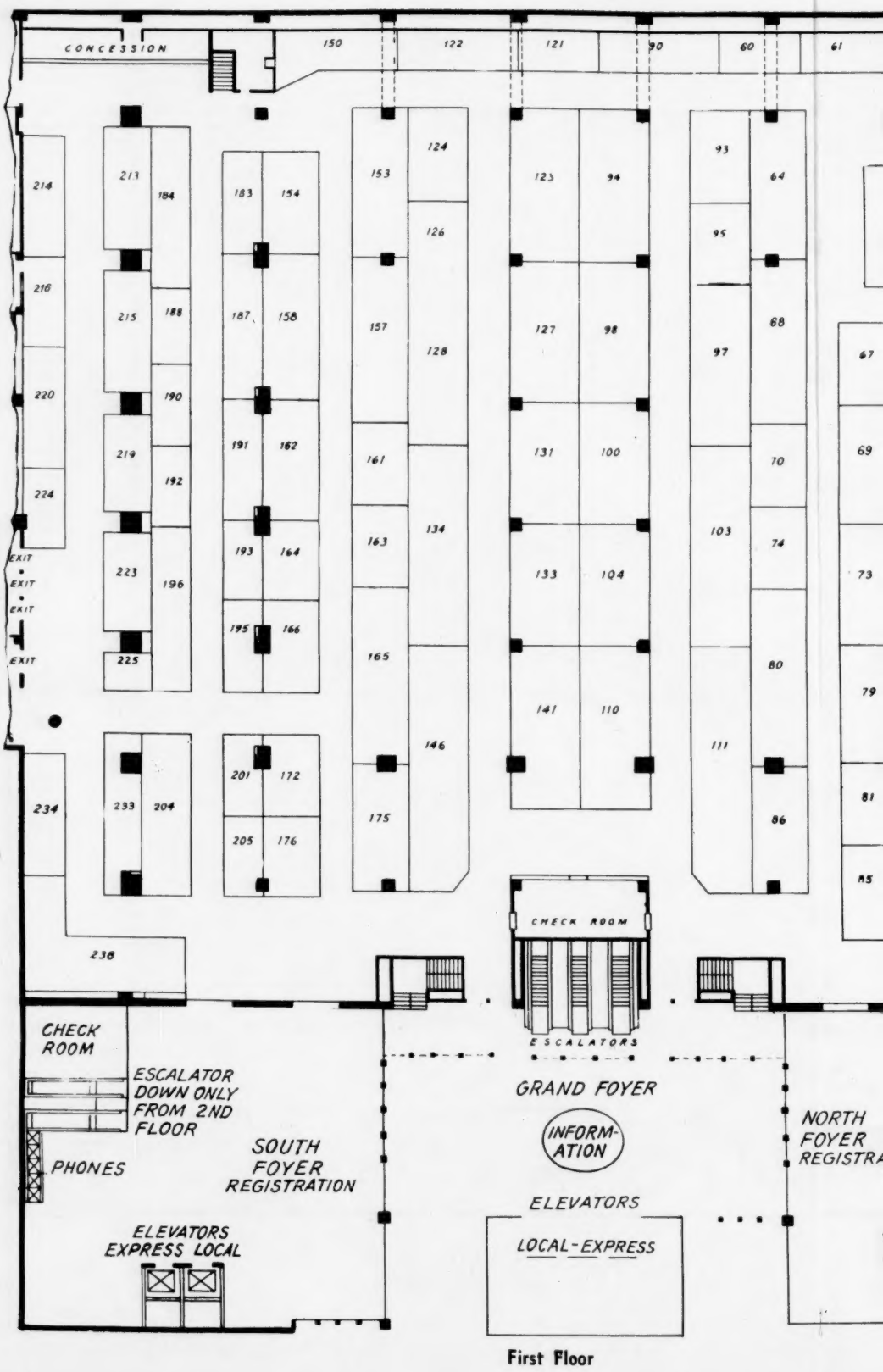


Fourth Floor

FINAL
CHEMSHOW
COVERAGE

Where to



First Floor

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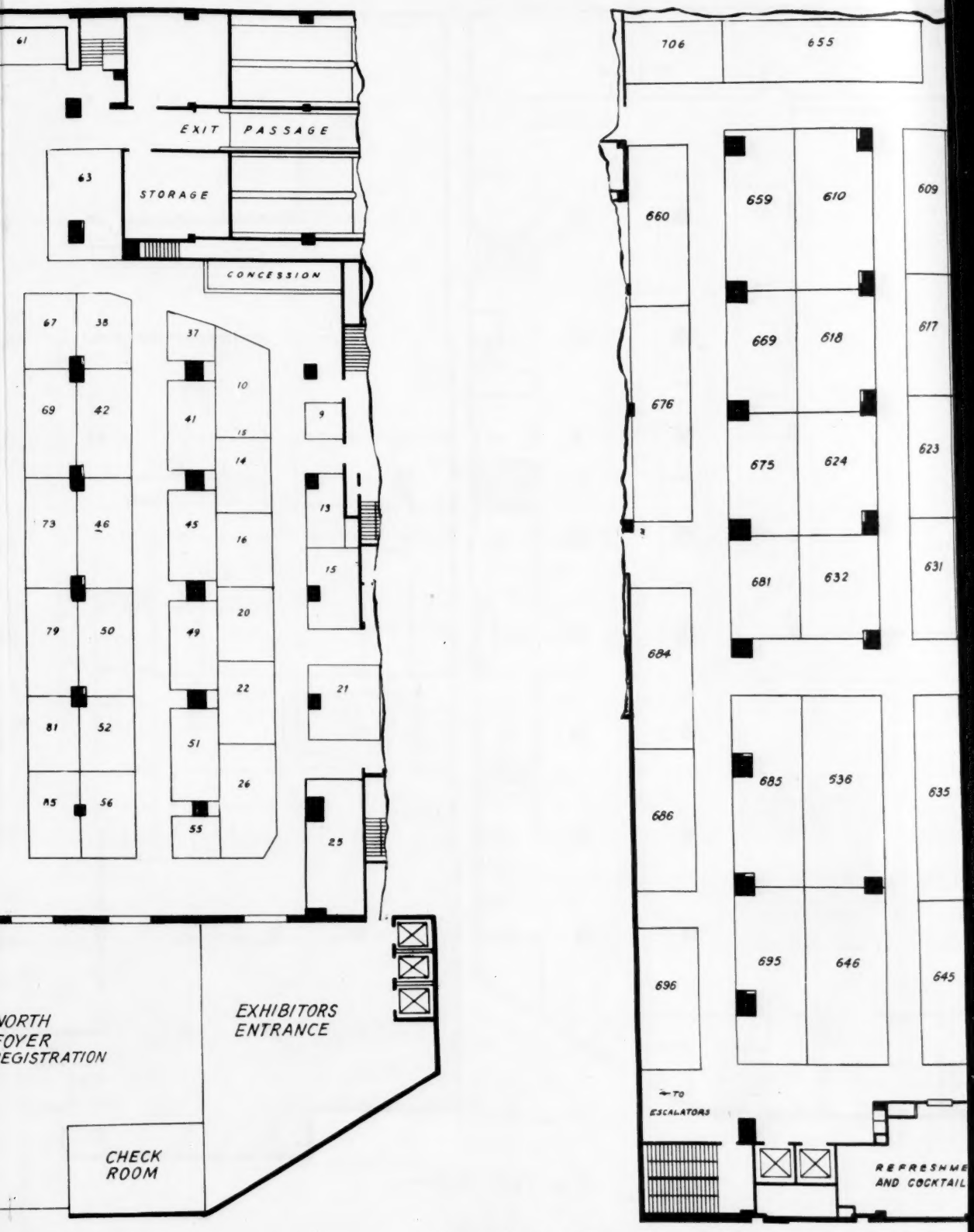

New York Coliseum

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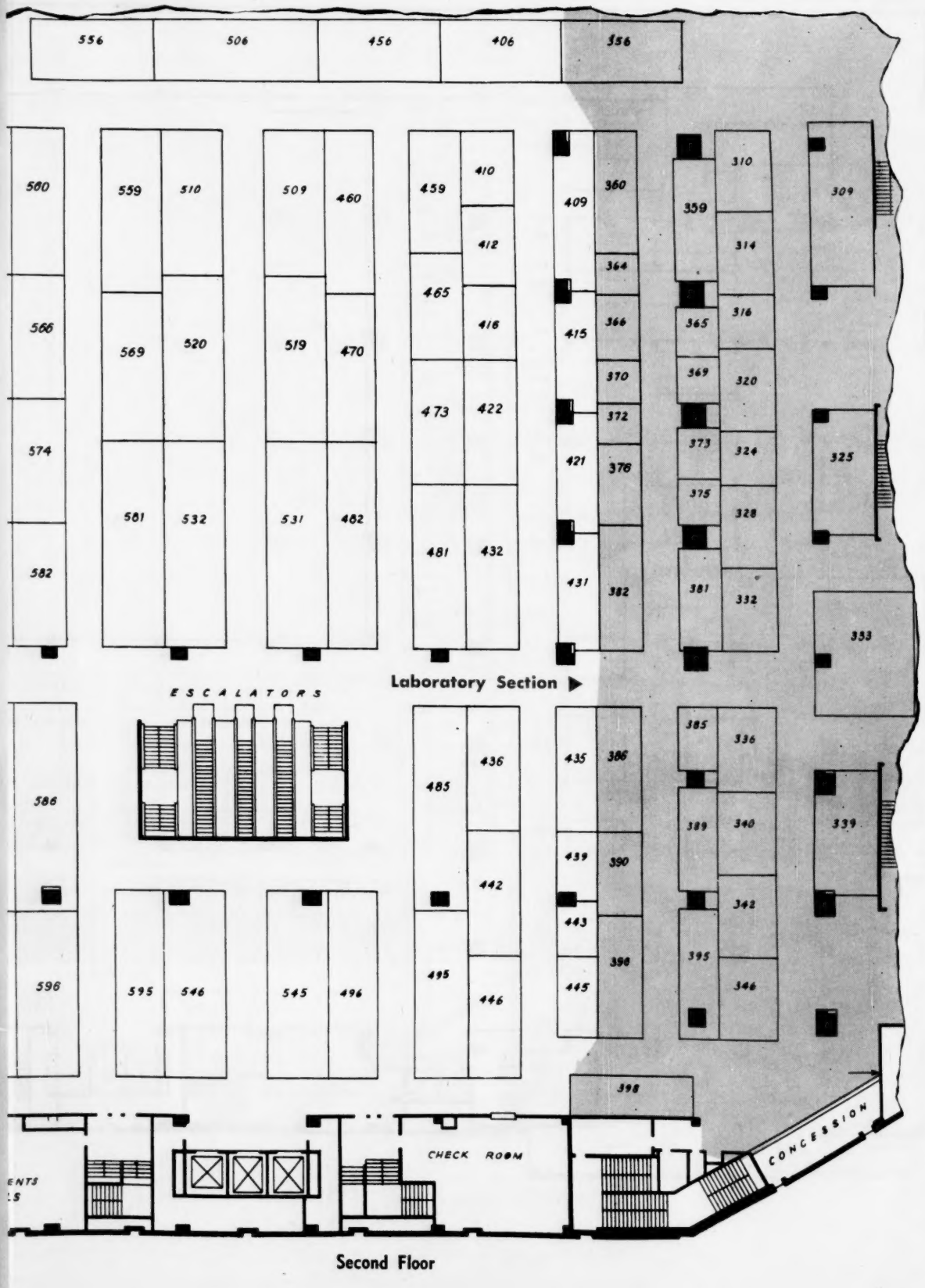
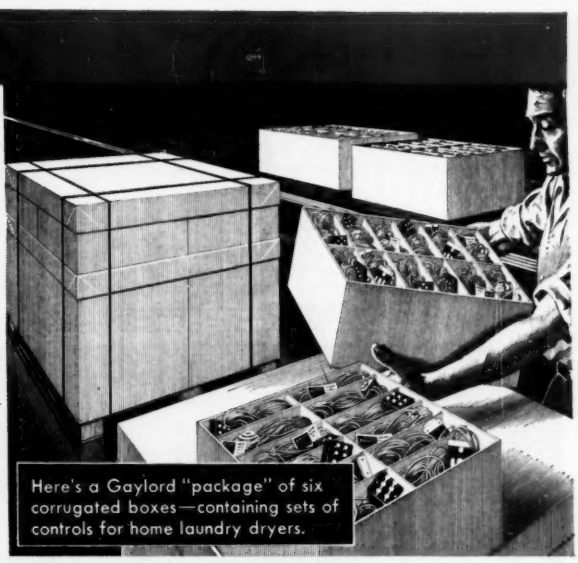


Second Floor

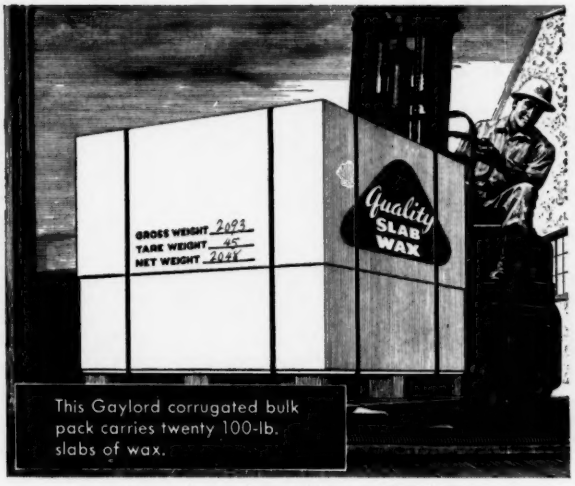
Each of these Gaylord Drumpaks holds 2,000 lbs. of bulk chemicals, replaces twenty 100-lb. units.

. . . save 20 to 25 manhours per car . . .



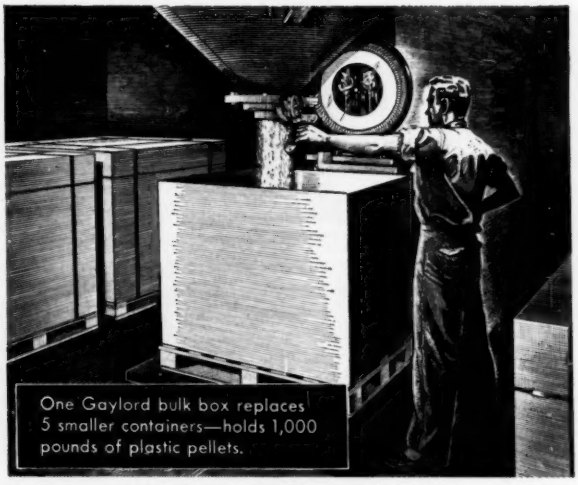
Here's a Gaylord "package" of six corrugated boxes—containing sets of controls for home laundry dryers.

. . . handling time costs cut 65% . . .



This Gaylord corrugated bulk pack carries twenty 100-lb. slabs of wax.

. . . cuts manhours in weighing and loading . . .



One Gaylord bulk box replaces 5 smaller containers—holds 1,000 pounds of plastic pellets.

. . . save space, save time in palletizing . . .

CUT COSTS WITH CORRUGATED BULK PACKS

Gaylord Boxes

From chemicals to component parts, Gaylord corrugated bulk packs and Drumpaks are saving money, time and handling for shippers. What's <u>your</u> line?

Call your nearby Gaylord packaging engineer.

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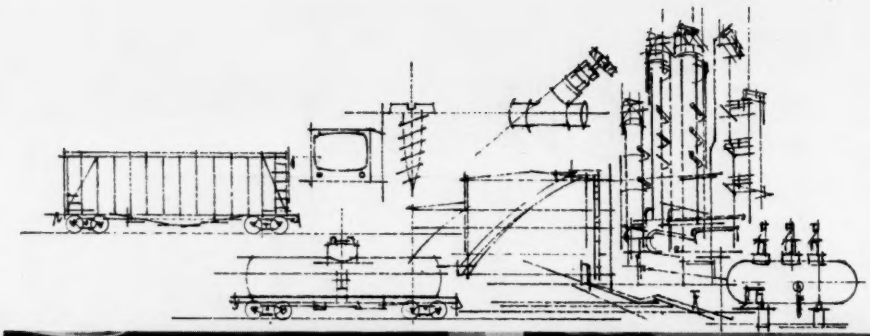

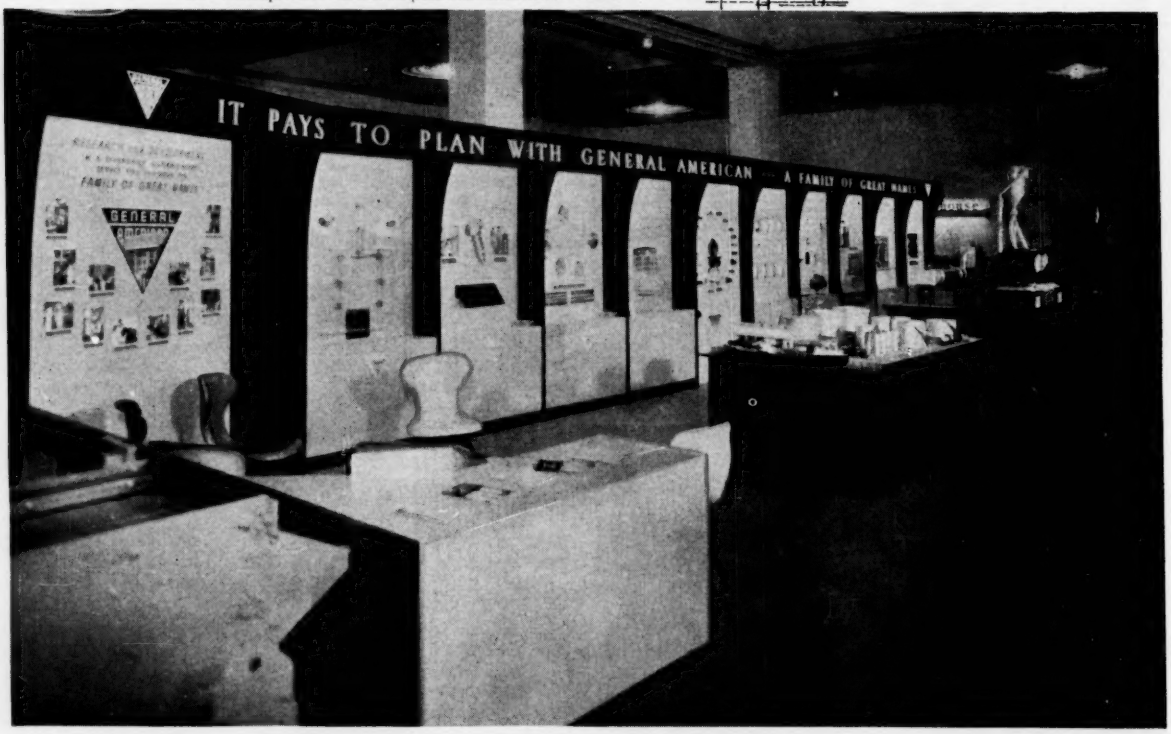

IF YOU PRODUCE, SHIP OR STORE . . . BE SURE TO SEE THIS SHOWCASE OF PROGRESS

If you're in the planning stage, be sure to visit the General American exhibit at the Chemical Show. Find out how General American can be your single source for process equipment, storage and distribution.

See General American in action: the model Airslide® Car, the Turbo-Mixer RDC Column, the pilot-operation Louisville Dryer and other developments that benefit you when you plan with General American. Look for the solution to your problems at the General American exhibit of the 26th Chemical Industries Exposition—Booths 436, 442 and 446.

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BLAST EQUIPMENT—SAND

BLENDERS

BLOWERS

BOILERS

BOILER COVERING AND INSULATION

BOLTING CLOTH

BOTTLING MACHINERY

BRICK—ACID PROOF

BRICK—INSULATING

BRICK—REFRACTORY

BRIQUETTING AND TABLET MAKING MACHINERY

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BUILDING MATERIALS

BURNERS

CABINETS—FILING, CHEMICAL, LABORATORY

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EJECTORS

ELECTRONIC EQUIPMENT

ELEVATORS

EMULSIFIERS

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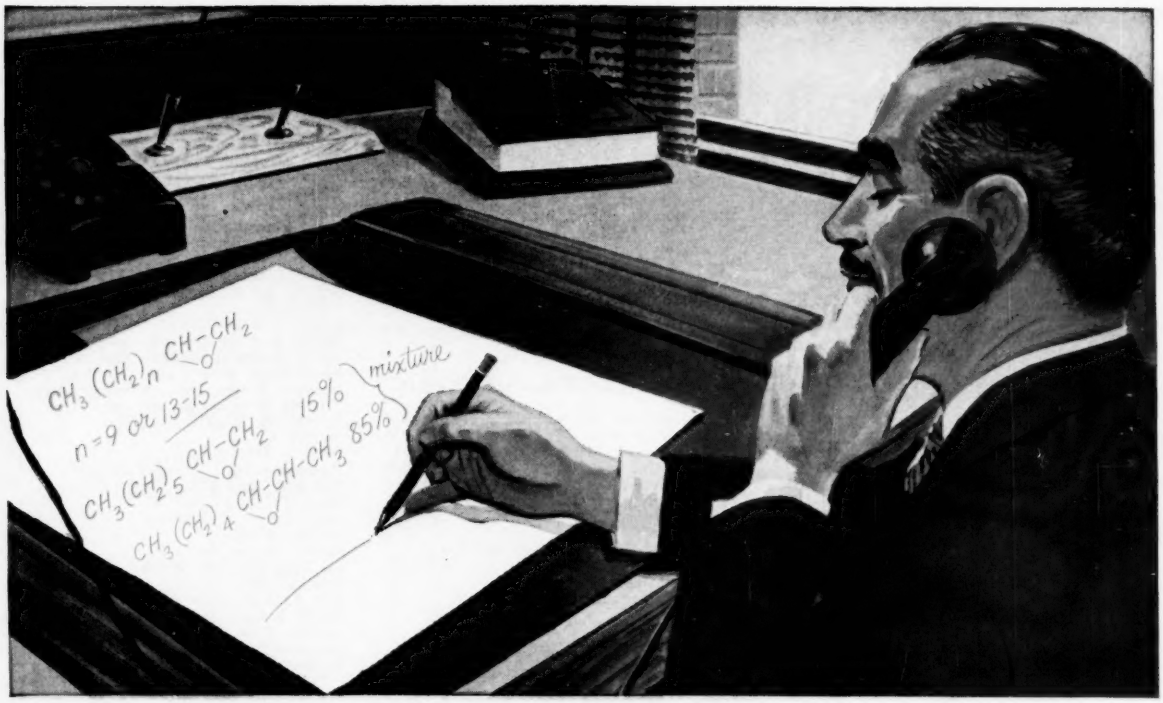
EXTRACTION PLANTS

EXTRACTORS

FANS

FEEDERS



Where can you use Olefin Epoxides, now available in development quantities?

Perhaps we can offer a few suggestions. New Olefin Epoxides now available in development quantities from Becco are showing great promise in applications, such as:

1. general solvents
2. solvents and reactive diluents for epoxy resins
3. intermediates in manufacture of: perfumeries, cosmetics, surfactants, plastics, lubricants
4. acid scavengers
5. corrosion inhibitors
6. stabilizers for chlorinated compounds
7. monomers
8. organic synthesis intermediates

These epoxidized Olefins, developed by Becco as a result of extensive research in epoxidation reactions, combine variable length hydrocarbon structures with reactive epoxy groups and undergo reactions such as polymerization, isomerization, reduction and ring-opening with a variety of active hydrogen compounds.

The compounds offered are high assay epoxides:

	F.P.°C	B.P.°C	Density at 25°C	Solubility
OCTYLENE OXIDE mixed 1,2-and 2,3-epoxy-n-octanes	< –50	76-78 (45mm)	0.830	very slightly soluble in water, soluble in hydrocarbons and other organic solvents.
DODECENE OXIDE 1,2-epoxy-n-dodecane	ca –10	97-98 (3.5mm)	0.836	insoluble in water, soluble in hydrocarbons and other organic solvents.
C_{16}—C_{18} OLEFIN OXIDE mixed 1,2-epoxy-n-hexadecane and -n-octadecane	ca 15	>110 (0.5mm)	0.842	insoluble in water, soluble in hydrocarbons and other organic solvents.

If you are interested in possible applications of these epoxy compounds, we shall be glad to supply experimental quantities and technical assistance. Why not begin by writing for your free copies of Bulletins 72, 73, and 74 — there is no obligation.

BECCO CHEMICAL DIVISION
Food Machinery and Chemical Corporation
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FILLERS

FILLING MACHINES

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FILTERS

FIRE DETECTION

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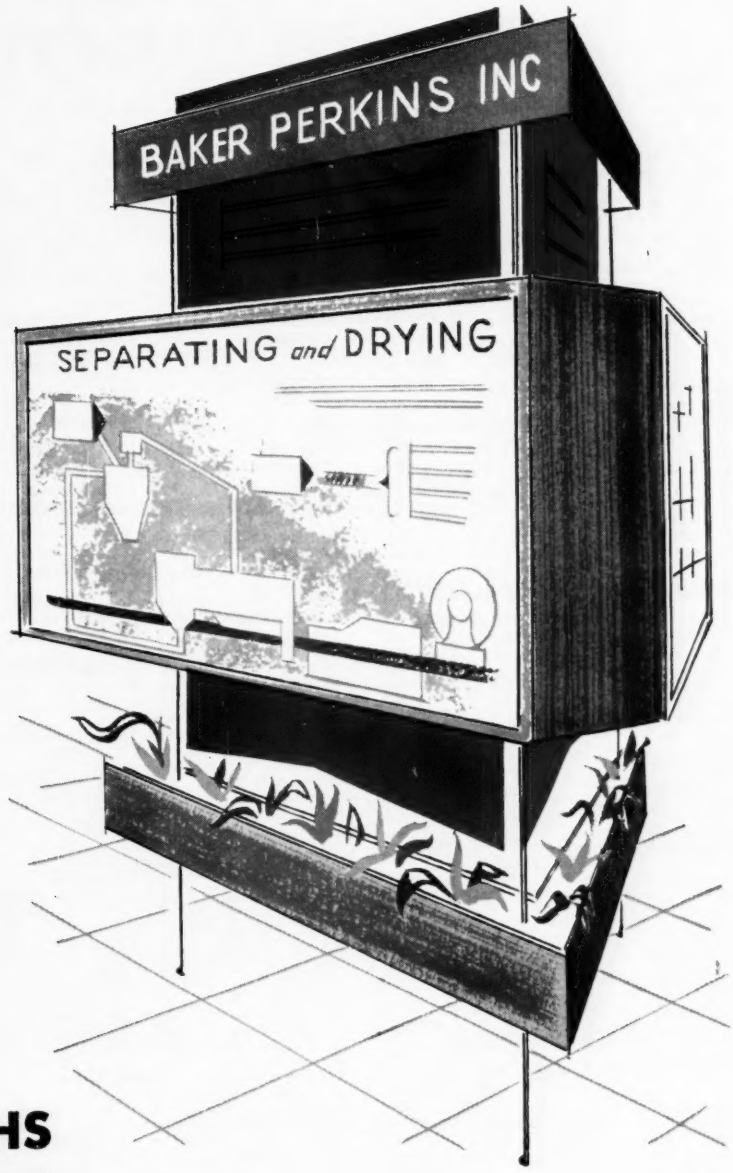
FIRE PROOFING COMPOUNDS

FITTINGS

THIS IS YOUR GUIDEPOST TO QUALITY PROCESS MACHINERY



look for it at the Chemical Show it identifies the BAKER PERKINS EXHIBIT

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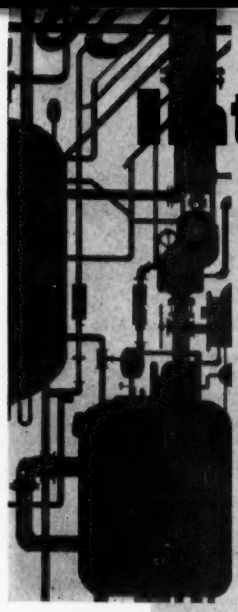

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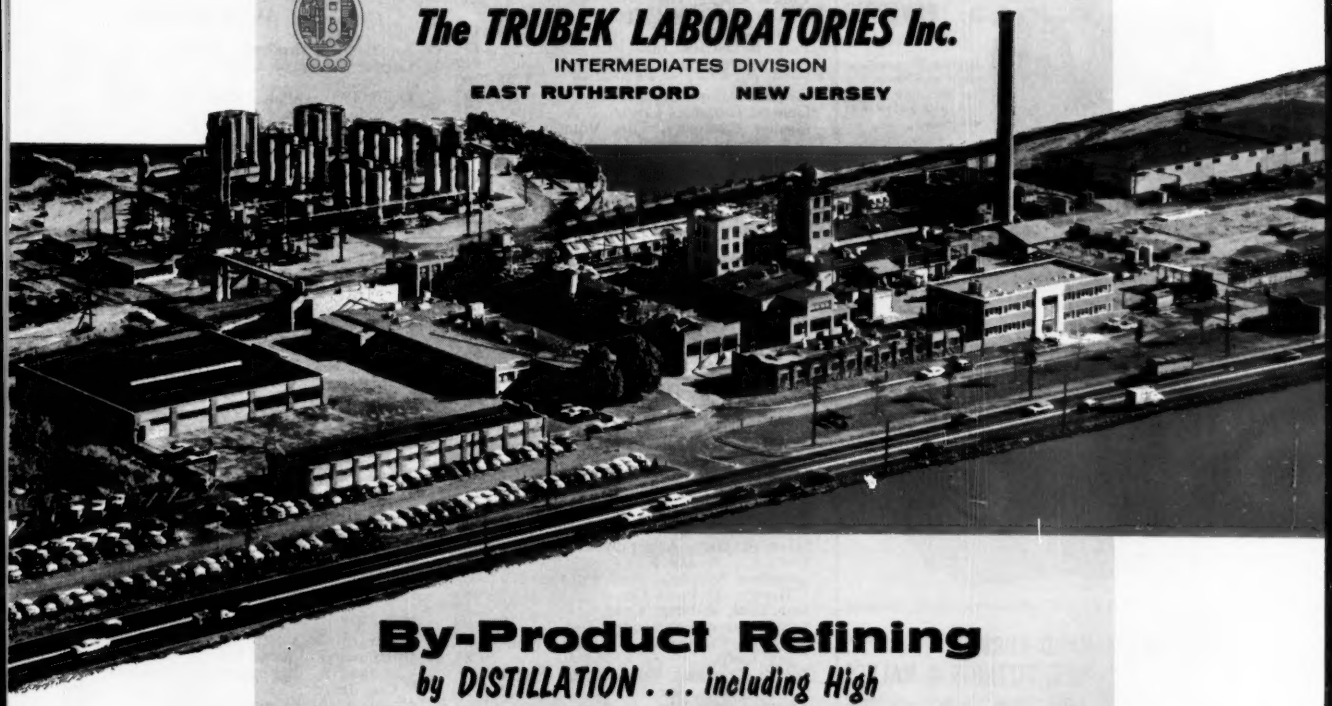

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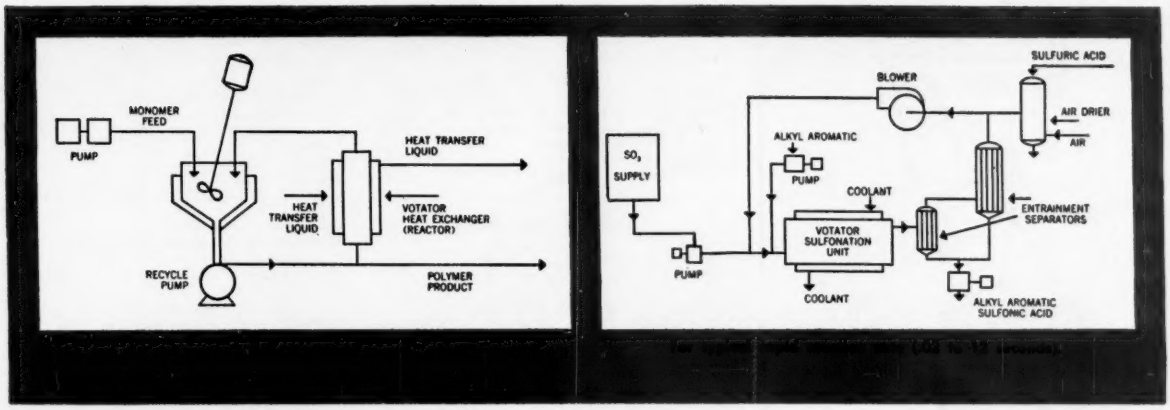

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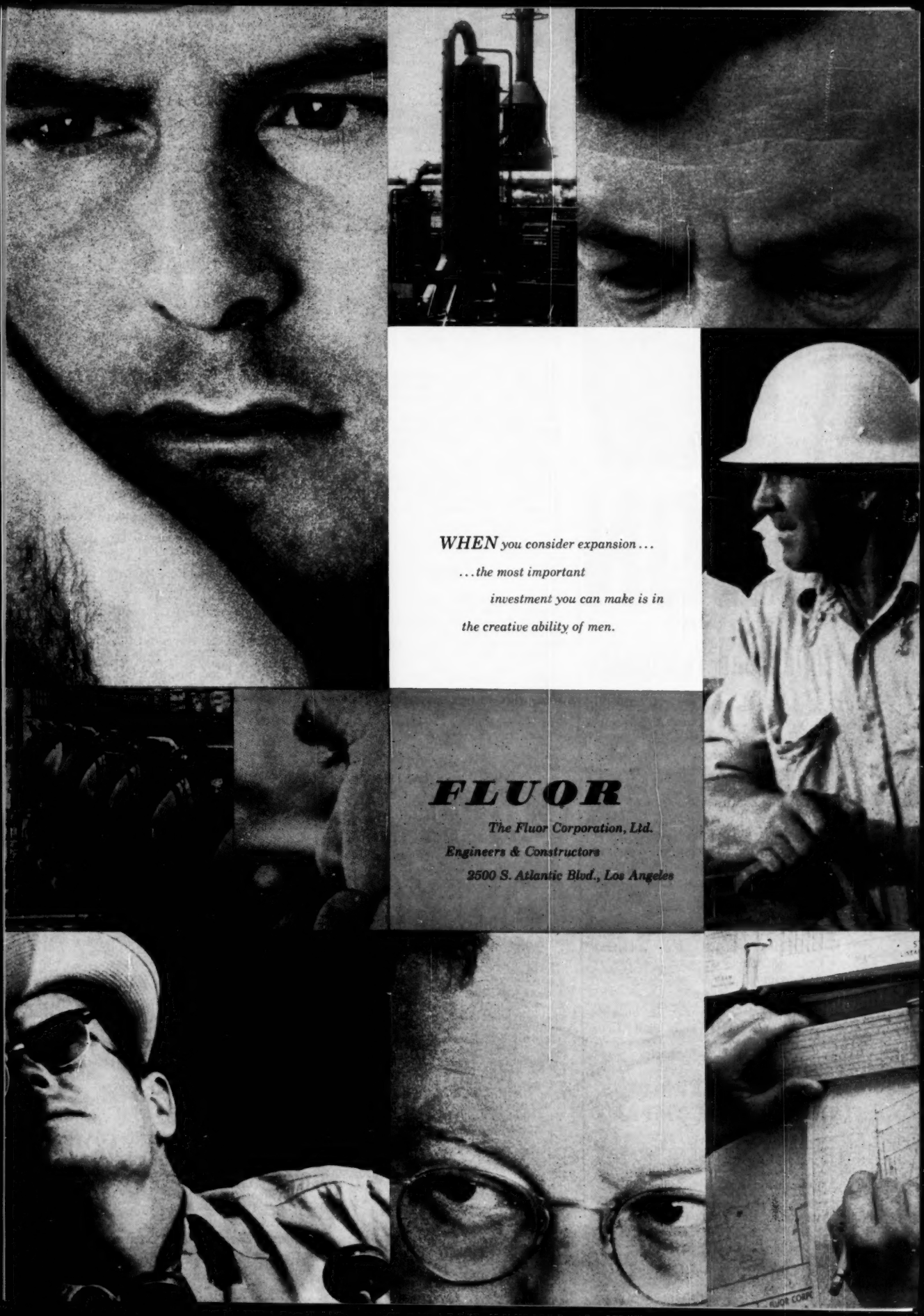
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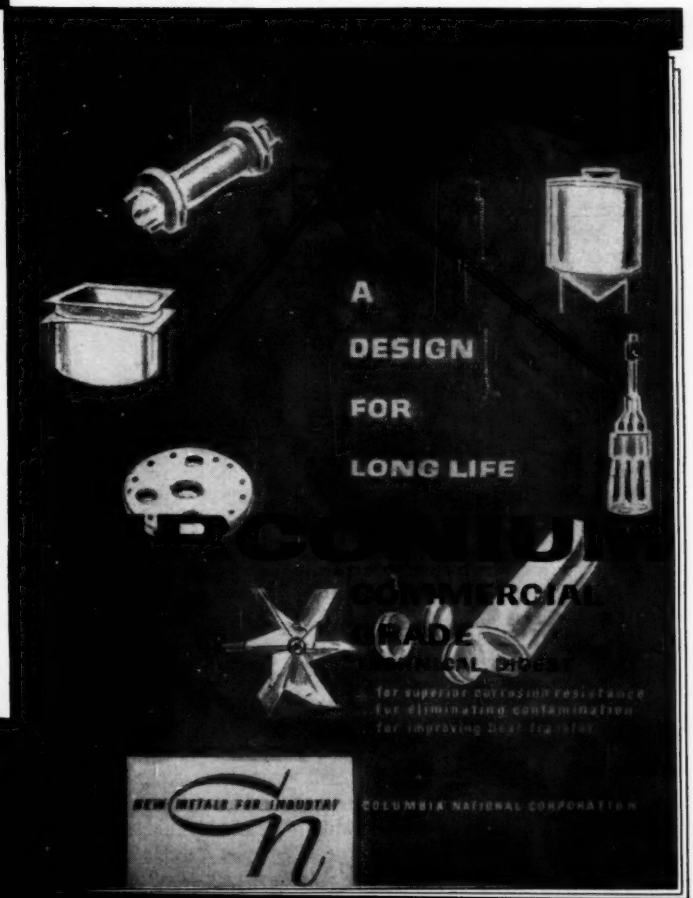

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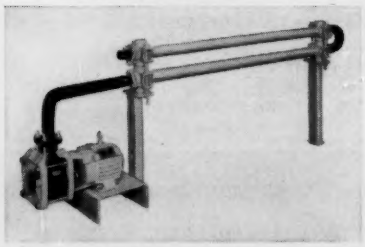

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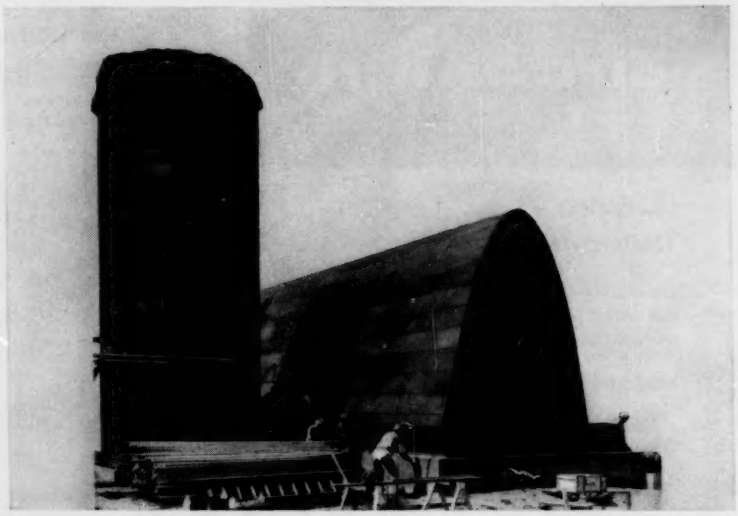

This installation has one of the largest capacity combustion chambers ever built. Made of graphite, the burner chamber (on right) and the carbon hydrator tower (on left) produce phosphoric acid from elemental phosphorus for the Shea Chemical Co. of Jeffersonville, Ind.

Corrosion resistance and structural stability at high temperatures make carbon and graphite invaluable in combustion chambers, reactor vessel linings, bubble cap trays and packing support structures. Virtually immune to thermal shock, and with little expansion under heat, carbon and graphite can be used in reducing atmospheres up to 3000°C. Furthermore, high thermal conductivity enables water-cooled graphite structures to withstand up to 2000° F under oxidizing conditions.

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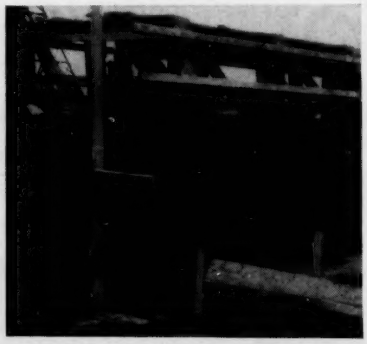

After a carbon or graphite structure is completed, shoring is removed. Special high joint-strength cement with essential properties of carbon and graphite bonds the blocks or slabs.

NATIONAL TRADE-MARK

CIAB's Henderson, top aides,* report on progress in chemical industry standards at San Francisco.

Standards Parley Stakes Out Savings

At the recent 39th annual meeting of the American Standards Assn. at San Francisco, the Chemical Industry Advisory Board reported on equipment standards that could lead to industry savings of well over $10 million.

As it has done before, CIAB took the annual ASA meeting as occasion to hold its fall meeting. CIAB chairman J. G. Henderson, of Union Carbide Chemicals Co., reported to the group of 19 members and guests that the long-awaited standards for centrifugal pumps are a step closer to being a reality. Draft standards are expected by next February, could win approval from ASA by the end of next year.

In practice, established standards could mean less downtime and replacement inventory, result in estimated $6.8-million savings to chemical firms. An ASA committee had the task of thinning about 132,000 different pumps down to far fewer standard models. The committee got pump manufacturers to accept these standards that, among other benefits, will enable pump users to obtain replacements from more than one manufacturer.

In the Works: Henderson also reported that formation of an ASA committee to study establishment of standards for cooling towers is now under way. One of the most important areas for study: materials of construction, including new materials, coatings and preservatives to supplement traditional redwood (*CW, Nov. 3, '56, p. 126*). "Since candidates for the subcommittee are now predominantly from cooling-tower manufacturers and wood producers, there appears to be a favorable opportunity for companies producing possible alternate materials to seek participation in subcommittee work," says Henderson. Hoped-for completion date: within three years.

J. D. Mattimore, of Tube Turns, stressed the need for standards in the titanium pipe and fittings field. Next move: to decide whether specs can be written. First step will be taken by titanium-pipe and -fittings makers who will meet in New York Dec. 6 to take up the standardization cudgels. Because it is a new field, CIAB points out, it should be relatively easy to set standards now, before the industry becomes too complex.

Also planning a New York meeting in December is an ASA subgroup on plastic fittings. Due for discussion: setting of strength ratings. Plastics, as materials of construction, will also come in for standards committee study soon.

Still unresolved is a proposal for CIAB to set up a full-fledged standards board (*CW, Nov. 3, '56, p. 132*). CIAB, which was formed at the request of the Manufacturing Chemists' Assn., is strictly an advisory group, wants to be empowered to supervise any proposed standardization. Charles E. Hilton, CIAB secretary, tells *CW*

*CIAB's secretary, Charles E. Hilton (left), Tennessee Eastman's Max B. Conviser, CIAB vice-chairman (right).

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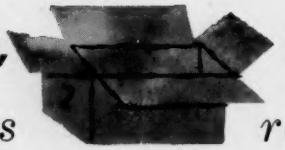
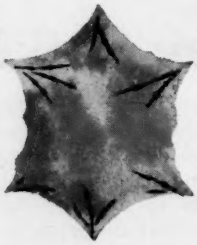
In **paper,**  *by keeping felts clean, Nopco detergents reduce shutdowns for cleaning equipment...in* **textiles,**  *they add important economies in raw wool scouring, wool and worsted processing, continuous boil-off operations...makers of* **cleansers**  *find in Nopco detergents a wide range of properties to produce everything from car washes to bubble baths...in* **tanneries,** *a*  *specially developed Nopco detergent removes excess grease from hides, produces better leather.*

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For complete information see Chemical Materials Catalogue—Pages 373-376

the idea is "still under consideration."

Nuclear Emphasis: At the main ASA meeting—the Eighth National Conference on Standards—nuclear energy talks were featured for the second straight year. Main area of discussion: safety.

Donald E. Hull, of California Research Corp., in discussing control of radioactive isotope exposure, likened radiation injury to baldness—there seems to be no effective treatment for it. He illustrated effective methods used by refineries in preventing injury from external radiation through use of distance, time and shielding.

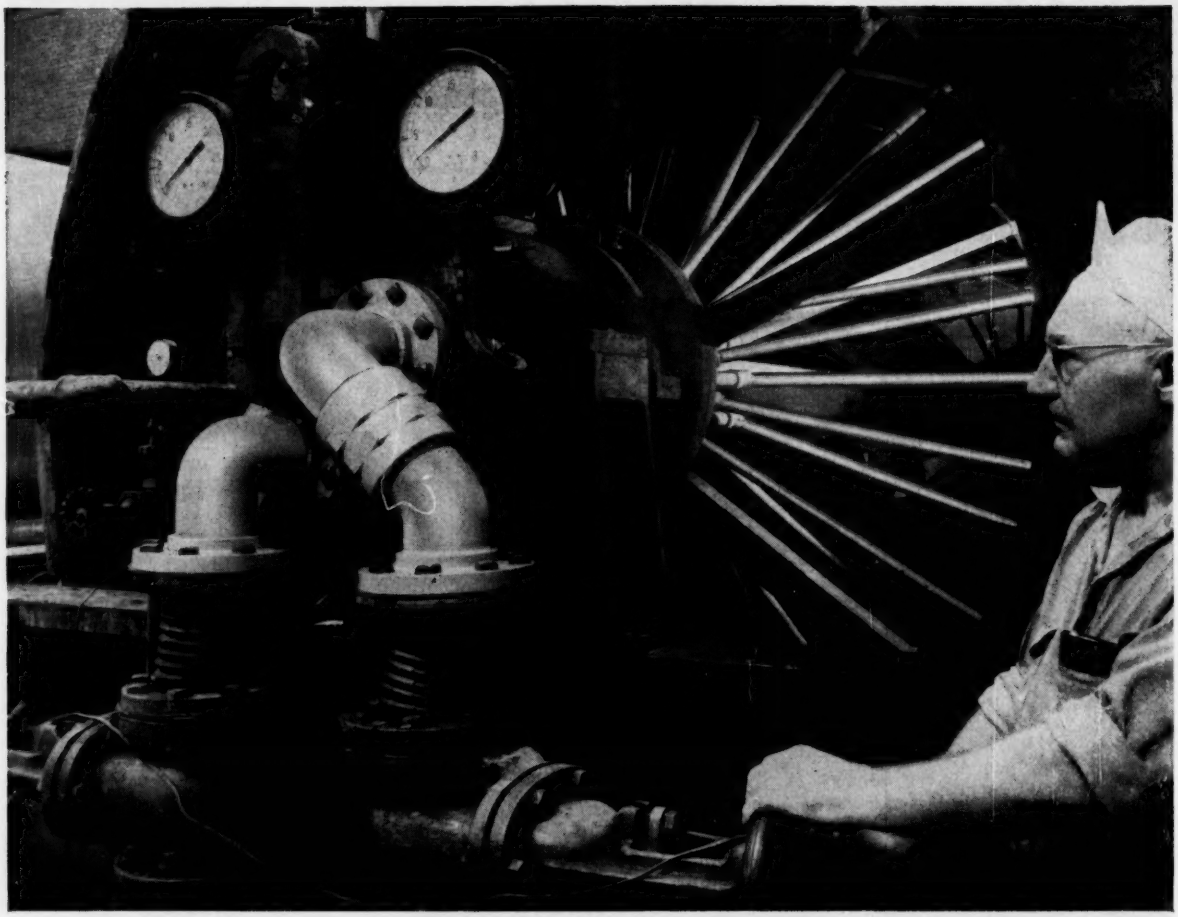
Level gauges in refinery vessels, utilizing gamma-ray sources of 100-200 millicuries of cobalt-60, have been used continuously in cracking plants at 1000 F for several years without incident. Aids in preventing injury: short exposure time through simpler, quicker operations; thicker shields than piston rings, lead shielding during plant maintenance shutdown; handling from a distance with a 7-ft. handle; use in the middle of a large vessel, a safe distance from the vessel's shell.

Use of radioactive catalyst beads to measure cat-cracker circulation rates raises a safety question—there is no way to recover the beads. Risk is calculated—only one bead in 10 billion is radioactive in the plant. And, says Hull, chances of overexposure are "infinitesimally small" and would, at worst, lop a few days off a 30-year life expectancy.

Time-Savers: At other sessions, Du Pont's Ralph A. Fuller and International Business Machine's John J. O'Farrell discussed time-saving standardization methods. Fuller told how Du Pont's "minimum adequate design" concept assists in freeing designers and draftsmen from many time-consuming activities through use of standards, elimination of unnecessary elaborations, and use of models and photography.

O'Farrell explained IBM's use of electronic data-processing machines to provide current standards data, establish sound standards and analyze the effectiveness of its standards program. Stressing the need to develop new standards more rapidly, he said that standards must be directed toward the needs of new development projects rather than the history of what has gone before.

USCOLITE PLASTIC PIPE



Pipeline of one of the Seven Wonders of American Engineering

Chicago's 403-million-dollar sewage disposal system every day processes 1200 million gallons of raw sewage. It's regarded by authorities as one of the seven engineering wonders of the nation.

Imagine the damaging effect on pipe of ferric chloride and other acidic chemicals used in the process! But this is not ordinary pipe in Chicago's great sewage disposal system. It is *Uscolite® Plastic Pipe.*

Uscolite Plastic Pipe was installed some eight years ago. Since then not a single leak has developed, not even a sign of weakness. The metal pipe it replaced had in some places been reduced to the thickness of a thumbnail!

The above rotary filter is but one of ninety-eight in the system. Each filter is 16 feet long, 11½ feet in diameter, contains 820 feet of 1" Uscolite Plastic Pipe and hundreds of Uscolite nozzles and additional fittings.

Uscolite Pipe and fittings are obtainable at our 28 District Sales Offices—each staffed with factory-trained engineers, at selected distributors, or write us at Rockefeller Center, New York 20, N.Y. In Canada, Dominion Rubber Co., Ltd.

NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL AWARDED TO USCOLITE PIPE

Mechanical Goods Division

United States Rubber

Technology
Newsletter

CHEMICAL WEEK
November 30, 1957

Add the Three Bears to your missile-fuel lexicon. The Air Force is believed to be working on three projects known by the code names Baby Bear, Mama Bear and Papa Bear. Although they have had financial circles buzzing for several weeks, not too much is known about them. But that they aren't fictitious is attested to by a rather esoteric reference in *Cold Box* (an Air Products house organ) to "the Bear Series."

The best available information indicates that Project Baby Bear is a pilot-plant operation in Painesville, O., and that the other two are scaled-up versions at Cape Canaveral, Fla. Air Products and Linde are believed to have received $100-million contracts for work on the projects.

Best guess is that they involve production of liquid hydrogen.

Hydrogen, of course, has long been recognized as a near-ideal propellent from many standpoints. For one thing, it would provide much higher thrust than some of the ultraenergy propellent systems currently being studied (*CW, Oct. 12, p. 148*). Its major drawbacks: because it's so light, it requires a large (though not necessarily heavy) system to contain it; and liquid hydrogen is nasty to handle.

Bureau of Standards scientists have been working on hydrogen-handling problems at the bureau's Boulder, Colo., cryogenic engineering laboratory. They recently reported a new technique that makes it easier—and less costly—to store and use liquid hydrogen. The trick: converting unstable orthohydrogen into the stable para form by catalysis with hydrous ferric oxide.

•

The Hawaiian Sugar Planters' Assn. electrodialysis unit for purifying sugar syrups will be shut down for several months, possibly until next July. Though the method has worked, the anion membranes used have been short-lived; replacement costs have distorted process economics.

Research is being stepped up, however, both at the planters' experimental station and in the labs of Ionics, Inc. (Cambridge, Mass.).

•

Newest twist in water conservation is a polyethylene-lined dam now being tested in Australia by Commonwealth Scientific and Industrial Research Organization. The leakproof liner for a 600-ft.-long, 80-ft.-wide experimental dam is made of Visqueen sheet. The plastic was laid across the dam in two large strips, joined together on the spot with new heat-sealing equipment developed by Plastalon Pty. Ltd. (Melbourne).

After it has been filled with water and tested for leaks, the dam will be utilized in the development of new techniques for controlling water losses by the Mansfield process of spreading cetyl alcohol on the surface.

Can cermets and evaporative cooling break the thermal barrier? According to Maj. V. Parfenov, of the Soviet Engineering Corps, Russian scientists have teamed the two to successfully withstand the tremendous heat generated in missile flights.

The cermet (the Russians call it a metalloceramic) developed for missile use is described as a regular ceramic, such as silica clay, containing 10-20% cobalt. Parfenov's reference to the application of this material in the body of a rocket indicates that it may be slated for use in intercontinental ballistic missiles, to resist the extreme temperatures generated by missile re-entry into the earth's atmosphere.

Evaporative cooling is being employed by the Soviets to protect the walls of combustion chambers and jet nozzles. The walls are porous, permit cooling liquid to be forced through under pressure.

•

You can expect to hear more about electrostatic precipitators for control of fluorine air pollution.

U.S. Steel has installed a $9-million unit at its Provo, Utah, plant to eliminate fluoride emission from stacks at a sintering plant. Lime dust, injected into open-hearth furnaces, combines with the fluorine, permits it to be precipitated as calcium fluoride.

Kaiser Steel has been working on a similar problem for eight years at its Fontana Works. Kaiser recently came up with an electrostatic precipitation system that, it says, recovers up to 95% of the objectionable pollutants.

•

How the government's latest switch on spending cutbacks (*see Washington Newsletter, p. 45*) will affect the Army Chemical Corps' research, production and development programs remains to be seen. But last week, in the face of an impending reduction of "several million dollars," this was the situation:

The phosphate development works at Sheffield, Ala., would be shut down; output of nerve gas at the Rocky Mountain Arsenal would have to be curtailed. Biological warfare development work at Pine Bluff Arsenal would also be cut back, and a major operation at Camp Detrick, Md., would be dropped completely.

However, there are indications that there will be more contracts to industry for development work on munitions delivery systems. The Chemical Corps has been given exclusive responsibility for the development and supply of incendiary rockets and chemical munitions for the popular 4.2-in. mortar. And there's a good chance the Chemical Corps will take over procurement of all chemicals for the Army. That would put a multimillion-dollar/year operation, involving thousands of different items, under centralized procurement.

if you're missing the green

A difficult "lie" can cost you a few dollars at the club house, but an obsolete plant in a crowded area can cost you a staggering amount in money and reduced efficiency.

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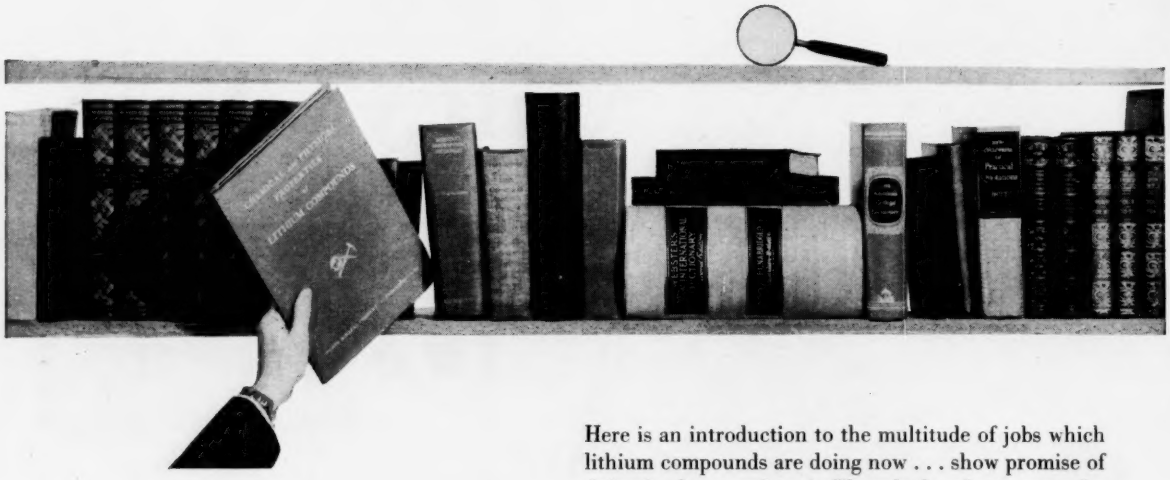

A DICTIONARY OF USES FOR LITHIUM CHEMICALS

past . . . present . . . future

Here is an introduction to the multitude of jobs which lithium compounds are doing now . . . show promise of doing in the near future. Though there's no space for them here, there *are* further details . . . and they *are* available. Let us know which compound or which job you're interested in, and we'll send you whatever data Foote has relating to your field of interest. Write the Technical Literature Department, Foote Mineral Co., 420 Eighteen West Chelten Building, Phila. 44, Penna.

absorbent (CO_2): lithium hydroxide

air conditioning: lithium bromide; lithium chloride; lithium chromate; lithium molybdate

baths (heat treating): lithium fluoride; lithium chromate

battery (alkaline electrolyte): lithium hydroxide monohydrate

catalyst (crystal formation, esterification): lithium carbonate

catalyst (polymerization; reduction): lithium metal

ceramic (enamels, frits, glazes, etc.): lithium carbonate; lithium chloride; lithium fluoride; lithium nitrate

ceramic (raw material) lithium carbonate; lithium fluoride; lithium hydroxide monohydrate; lithium borate

coating (lens): lithium fluoride

coating (welding rod): lithium carbonate

conductivity* (increasing of electrolytes, fused salts): lithium chloride

coolant: lithium chloride; lithium metal

corrosion inhibitor: lithium bichromate dehydrate

cosmetics: lithium stearate

crystals (optical): lithium fluoride

dehumidifier: lithium chloride

de-icer: lithium chloride

dispersing agent: lithium citrate

dispersion stabilizer (deflocculant, ceramic): lithium citrate

electrolyte: lithium hydroxide

explosive:* lithium chlorate; lithium nitrate; lithium perchlorate

fillers* (rubbers, plastics): lithium aluminum silicate

flux (ceramic): lithium fluoride

flux (soldering): lithium borate

flux (welding and brazing): lithium chloride; lithium fluoride

freezing point depressant: lithium chloride

fuel*: lithium hydride; lithium metal

grease: lithium hydroxide monohydrate; lithium stearates

heat (transfer medium): lithium chloride; lithium metal

mud* (oil well drilling conditioner): lithium phosphate

nuclear material*: lithium metal

oxidizing agent*: lithium bichromate dehydrate; lithium chlorate; lithium chromate; lithium perchlorate

pharmaceuticals (production of): lithium carbonate; lithium chlorate; lithium citrate; lithium metal

plating reagent: lithium citrate; lithium cyanide; lithium hydroxide

pyrotechnics*: lithium chlorate; lithium nitrates; lithium perchlorate

reducing agent: lithium hydride; lithium aluminum hydride; lithium borohydride; lithium metal

scavenger (metallurgical): lithium metal

solder (silver): lithium metal

suspension stabilizer: lithium citrate

* You may very well be the *first* to take advantage of this potential use for lithium compounds.

Foote MINERAL COMPANY

RESEARCH LABORATORIES: *Berwyn, Penna.*
PLANTS: *Cold River, N. H.; Exton, Pa.; Kings Mountain, N.C.; Knoxville, Tenn.; Sunbright, Va.*

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Symposiums at the Pasteur Fermentation Centennial attracted an audience of nearly a thousand . . .

Probing the Fermentation Chemical Future

Scientists who thronged the Waldorf-Astoria in New York at a special meeting last week heard predictions of big things to come from fermentation research. The occasion: the Pfizer-sponsored Pasteur Fermentation Centennial,* which also produced news of an antibiotic, kanamycin, that's potentially valuable against tuberculosis and acute infections.

Marvin Johnson, of the University of Wisconsin, sketched bright prospects for fermentation in chemical processing. Conceding that in the future "simple molecules will be made from petroleum rather than carbohydrate," Johnson showed how microbiological techniques could be used for the production of organic acids, the modification of complex molecules, even the creation of new compounds.

A primary application of fermentation processing could well be in the production of essential amino acids for animal feeds (and potentially for human food in overpopulated areas), but considerable work is yet to be done. Currently, DL-methionine, at $2.40/lb., is about the only amino acid cheap enough for feed use, and it is produced synthetically. L-lysine ($12/lb.) is made by fermentation and synthetically, and it is still too costly for widespread use.

The relatively new use of microorganisms to modify existing compounds, Johnson believes, has great promise. Reason: chemical modification of a specific site in a complex molecule (by oxidation, reduction, etc.) is usually troublesome. Enzymes, on the other hand, are specific in their action. Limited knowledge is again a handicap; behavior of only a few organisms toward only a few compounds is presently known.

Fermentation will be yielding new compounds, too, but work hinges on improving culture-testing techniques. Also, the creation and testing of induced mutants of microorganisms should, Johnson believes, help increase fermentation chemical yields.

Another potentially profitable research area lies in development of ways to grow plant or animal cells by fermentation methods. As Johnson puts it, "If the many problems involved can be solved, it will be possible to grow plant cells as one would grow microbial cells. Many valuable compounds now obtained from plants, such as alkaloids, may be obtained by plant tissue culture. The problems in animal tissue culture are greater, but the possibilities of profitable gains in research are also greater."

New Roles for Antibiotics: Talking about current trends in antibiotic research, Paul Burkholder, of Brooklyn Botanic Garden (Brooklyn, N.Y.), called "outstanding" the surge in antibiotic production for other than pharmaceutical uses. Thanks to applications research, antibiotics are used in food preservation, against plant diseases and as animal growth stimulants. Conjectures Burkholder, "Perhaps if it were desirable, human fertility and growth rate could be increased by planned use of antibiotics."

Clinical problems that need (and are getting) research are allergies and toxicity associated with the drugs, the resistance of pathogenic microorganisms to drugs, and the overgrowth of secondary pathogens, especially fungi.

"Attempts to overcome these difficulties," he summarizes, "are found in the use of new and better antibi-

*It was in 1857 that Louis Pasteur discovered that living organisms cause fermentation.

RESEARCH

otics, more effective combinations of good drugs, modified forms of drugs, different kinds of vehicles, adjuvants, and anti-allergens."

Need for More Antibiotics: Hamao Umezawa, of National Institute of Health of Japan (Tokyo), reported on his discovery, kanamycin. Umezawa, one of 18 conferees (from six countries) who attended the centennial sessions, goes along with Burkholder on the need for new antibiotics, tells *CW* the major research effort now is to find one that's effective against cancer. He has personally turned up 35 of some 350 antibiotics that have been scientifically described.

Kanamycin is obtained from a strain of *Streptomyces* isolated from Japanese soil, attacks both Gram-positive and Gram-negative bacteria. Bristol Laboratories, Inc. (Syracuse, N.Y.), currently owns an exclusive license on the drug, is making it for clinical trials. About a dozen group trials are now under way to check kanamycin's value against tuberculosis and acute infections (e.g., of the urinary tract).

Like many of his colleagues, Umezawa hopes antibiotics may be found to combat common virus infections. Success in this direction would probably mean a major increase in the antibiotics market, now about $250 million/year for human therapy alone.

PRODUCTS

Derivatives: Air Reduction Chemical Co., division of Air Reduction Co. (New York), now offers methyl butenol and methyl hydroxy butanone in development quantities. They're derivatives of methyl butynol, are offered as intermediates useful in the synthesis of perfumes, food colors and flavors, pharmaceuticals and plastics.

•

Reagent Entry: Barium chloranilate, a new reagent for sulfate determinations, is now available from Fisher Scientific. Price: $11.20/10 g.; $23.55/25 g.

•

Alkyl Chlorides: 1-Chlorotetradecane and four other alkyl chlorides are now offered for evaluation by Henley & Co. Inc. (New York).

•

Crystal Aids: City Chemical Corp. (New York) now produces and distributes a series of pure chemical

Is Your Company Saving Money and Making a Better Product by Using AMSCO Solvents?

✓ Check this list:

Hundreds of companies, scores of industries throughout the United States are saving time, saving money, improving their products, or increasing safety by using Amsco solvents.

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CHEMICALS—As ingredients in many chemical reactions and also as a raw material in the manufacture of some synthetic chemicals.

CLEANING—Used in preparation of detergents for commercial dry cleaning of fabrics and as spot removers; also as a cleaning solvent for textiles, metals and machine parts.

EXTRACTION—Most of the close boiling solvents are used as the extraction medium for fats, vegetable oils, glue, rosin, resins and other natural occurring products. Also as extraction solvent for production of certain pharmaceuticals.

GLUES, ADHESIVES—Used as a solvent for adhesive compounds and in production of industrial and decorative adhesive tapes.

INK—These have application as solvent in production of intaglio, heat set inks, printing inks, etc.

INSECTICIDES—Several are used as solvent and carrier for insecticides.

OILCLOTH, ARTIFICIAL LEATHER AND COATED PRODUCTS—Applied as a solvent in the printing of table and floor oilcloth; also in the impregnation of various types of fabrics.

PAINT, VARNISH & LACQUERS—Used as solvent and thinner in manufacture of decorative and industrial paints, varnishes, lacquers and enamels. Also varnish removers and specialties.

PRINTING—Used as a general solvent and cleanser in printing plants for the cleaning of presses, plates and rollers.

RESIN—Amsco naphthas are used in the production of resin solutions including gloss oil.

RUBBER—Because of their qualities certain Amsco naphthas have application as a solvent in the preparation of rubber cements, rubber shoes, rubber dip goods. Also vital in the manufacture of rubber tires, both natural and synthetic.

TEXTILE—Amsco naphthas are used for cleansing fabrics and also for pad dyeing, printing and treating.

WAX & POLISH—Amsco naphthas are ingredients in many compositions of liquid and paste waxes and polishes, such as for floors, furniture, shoes, etc.

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compounds used in growing crystals for semiconductor research. Included are potassium cobalticyanide, lanthanum ethyl sulfate.

•

Rugged Polyester: Sierracin Corp. (Los Angeles) is out with a plastic called Sierracin 880 that will resist to 300 F, retain its shape until charred. Suggested uses: airplane cockpit windows, medical equipment, special cameras.

•

Citraconic Anhydride: Now available from Chas. Pfizer & Co. (Brooklyn) in laboratory and pilot-plant quantities is citraconic anhydride, a low-molecular-weight liquid. The new entry may be used as a curing agent for epoxy resins, intermediate in synthesis of polyester resins.

EXPANSION

• Imperial Chemical Industries has just completed a $750,000 isolation unit for breeding germ-free animals at its new research center in Alderley Park, Cheshire, England The center employs 450, will be used for studies in both infectious and noninfectious diseases, anesthetics and sedatives.

• Atlas Powder Co. (Wilmington, Del.) recently established a toxicology section in its chemical research department. Object: to investigate the safety of handling, use and consumption of Atlas products.

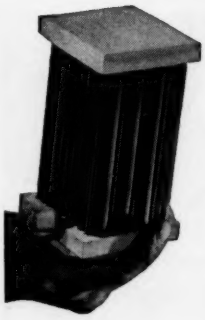
• National Aluminate Corp. (Chicago) has added a new $1.5-million section to its administrative and laboratory facilities.

• Michigan Chrome and Chemical Co. (Detroit) has broken ground for a new research and development laboratory, which is scheduled for occupancy March 1, '58.

LITERATURE

• Properties of General Electric's Lexan polycarbonate resin (*CW, April 6, p. 96*) and other thermoplastic molding materials are compared in a new chart available from GE's chemical development department (Pittsfield, Mass.).

• "The Aerograph Research Notes," a new quarterly published by Wilkens Instrument & Research, Inc. (Walnut Creek, Calif.), discusses gas chromatography problems.



An important message to the man who thinks his air pollution problem is too difficult—or too expensive—to correct

Too often an air pollution problem exists today for one reason only: The company concerned does not yet know there is now at hand an efficient, effective method of correcting it—often at an actual saving through waste heat recovery.

The method is catalytic oxidation, and the firm that makes this development possible is Oxy-Catalyst, Inc.

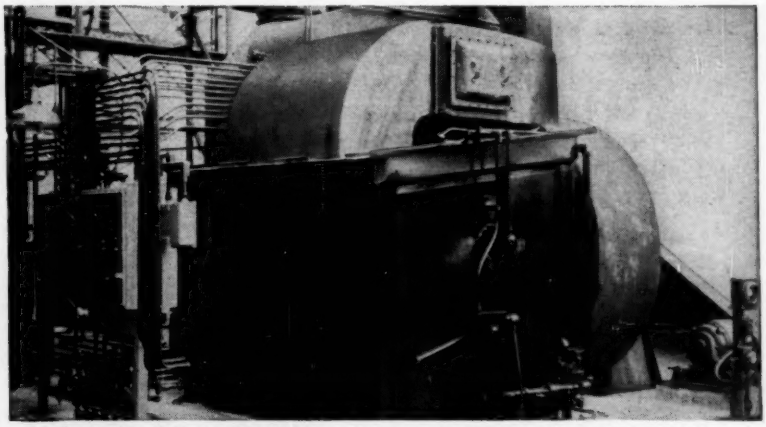
Catalytic oxidation works by "burning" harmful and irritating combustible contaminants in an exhaust stream at temperatures far below their normal ignition points. It provides close to 100% cleanup of foul-smelling fumes and odors. It reduces fire hazards and maintenance problems by eliminating troublesome condensates in oven and furnace exhausts.

Thus Oxy-Catalyst installations can not only control air pollution. They can also be used to release the latent heat energy in waste and process gases. And they can sometimes do both at once.

A More Efficient Catalyst

The key to successful catalytic oxidation is, of course, the catalyst itself. Features which make the Oxycat unique are:

- *The combination of platinum and alumina, chosen from hundreds of elements and compounds as the most active and long lasting catalytic agent*
- *The carrier, a high-grade porcelain selected for its strength, chemical inertness, and resistance to high temperatures*



Oxycat installation on Standard Oil Company of California's phthalic anhydride unit at Richmond, Calif.

- *The patented method of applying the catalyst to the carrier*
- *The patented mechanical design of the Oxycat itself*

The result of this combination of features is a catalytic unit with exceptionally long life at high efficiency. Oxycats are strongly resistant to thermal shock—to contaminating agents and clogging. There's no problem of frequent cleaning or reprocessing. Oxy-Catalyst installations are still functioning at high initial efficiency after over 20,000 hours without maintenance or servicing.

Already in Wide Use

Oxy-Catalyst installations are now working effectively in a wide range of industries—oxidizing combustibles from such processes as asphalt oxidation; phthalic anhydride, polyethylene and ethylene oxide manufacturing; catalytic cracking; and many others.

Oxy-Catalyst installations are carefully engineered to your individual requirements, and our engineers, working with yours, can install Oxycats effectively in any existing plant. So, if air pollution is a problem in your operation—if irritating fumes and odors are costing you neighborhood good will—you should know that Oxy-Catalyst offers a practical, realistic answer to your problem.

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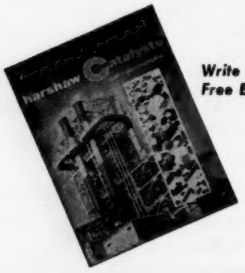

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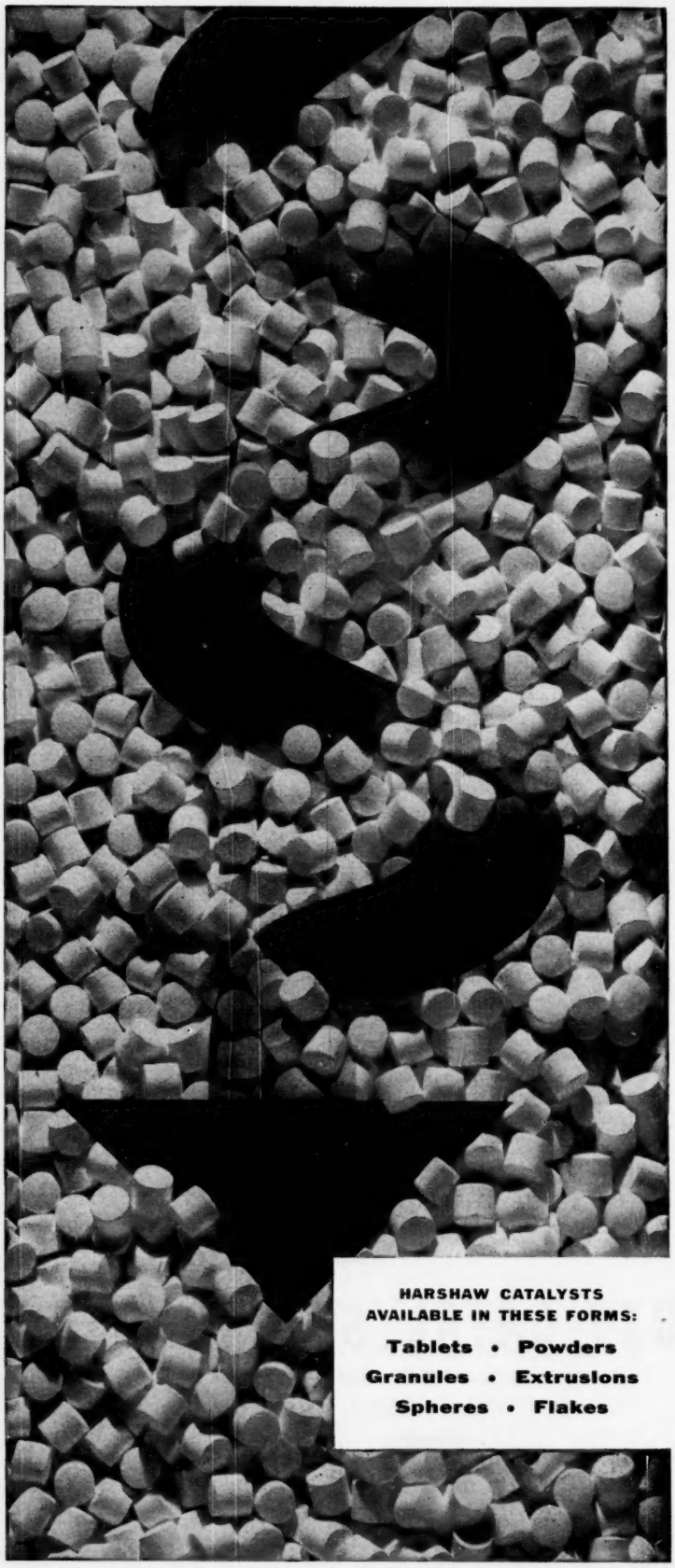

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Market Newsletter

CHEMICAL WEEK
November 30, 1957

How U. S. uranium concentrate output may be slowed down, as urged by AEC's Jesse C. Johnson (*CW Market Newsletter, Oct. 9*), is not yet certain. But unofficial comments by AEC officials at Grand Junction, Colo., now point up the possibilities.

Some mill contracts reportedly will not be renewed; in other cases, contracts up for renewal and extension will be "stretched out" over a longer period of time. Some mills will be requested to slow down their ore runs in return for an extended contract through 1962-66. There's hope that some imports from Canada might be diverted to Britain—thereby allowing more room for purchase of U. S.-produced concentrates.

Reaction to the proposed cutback, mainly from investors, is mixed. The man in the street—holder of penny uranium stocks—is dismayed at the disclosure of an oversupply of uranium for current government needs and for the slowly developing requirements of civilian nuclear power. Uranium stocks, already weakened in past months, dropped further in Salt Lake City as a result of the AEC announcement.

Reactions of professional investors vary according to personal interests. Operators of existing mills are inclined to applaud the cutback. Reason: U. S. expenditures for uranium concentrates in the next five years will still be immense (although subject to possible unfriendly Congressional review). But would-be operators, who are trying to get in on the uranium program, view the announcement with understandable gloom.

Vanadium purchases, too, will be curtailed by AEC, which will not renew vanadium purchases in new contracts with ore concentrators. AEC now buys vanadium concentrates from a half-dozen uranium mills. The plight of Colorado uranium-vanadium producers is underscored by the weakening price of vanadium on the open market. Last summer, for example, AEC's Grand Junction operations office offered vanadium for sale, elicited only two bids (53¢ and 78¢/lb.) for flake material.

•

Chemical process industries must promote synthetic textiles, and not depend on the textile industry to do it, according to Milton Harris, vice-president of Gillette Co. and president of Harris Research Laboratories. The reason, Harris last week told attendees of the American Assn. of Textile Chemists and Colorists convention in Boston, is that textile makers have little loyalty for certain synthetic fibers.

Right now, Harris added, textiles consume about $2.3 billion worth of chemicals each year, and demand will increase if synthetic textiles are properly promoted by CPI.

That such promotion will not be easy was the implied warning to AATCC, by Arthur D. Little's president, Raymond Stevens. Textile

concerns, he said, face rigorous competition and narrow profit margins in the next few years. Some companies will drop by the wayside—the survivors will be those that can best merge technological skill with sound business practices.

•

Why there's a boom in cold remedies: New cases of acute upper respiratory diseases topped 63 million and involved 190 million bed-days of disability in the 17 weeks of July 1 to Oct. 26. So says U. S. Public Health Service, reporting results of its recently initiated national health survey. The survey was authorized by the 84th Congress to give drug and insurance companies, health agencies and other groups a continuing picture of the extent of illness and disability in the U. S. Data is gathered in regular biweekly interviews of some 700 households (with 2,200 persons), selected to provide a representative sample of the nation's civilian population. The figures include only persons bedded at least one day of the week by newly acquired acute respiratory infections.

Last week's report, giving cumulative results through Oct. 26, shows that new cases held at about 1,000/week through July and early August, rose to 4,500 in mid-September and then—with the flu season in full swing—bolted to a peak 12.2 million in the week ending Oct. 19. The following week saw a decline of 2.2 million. But survey statisticians, stifling a possibly premature cheer, cautiously note that "a variation of this magnitude could arise from sampling fluctuations" inherent in such a small national sample.

•

Vitamin and copper reductions feature this week's price news. The pyridine hydrochloride (B_6) cut, second this year, slashes the synthetic vitamin's tag down to $245/kilo from the previous $295 established in February. Prior to then the material sold at $375/kilo.

Domestic custom smelters last week nicked off another ½¢/lb., bringing the price of their metal down to the 25¢/lb. level of early September. The latest reduction wipes out the 1¢/lb. increase smelters posted in mid-September (*CW Market Newsletter, Sept. 21*) when sales turned up slightly.

SELECTED PRICE CHANGES — WEEK ENDING NOVEMBER 25, 1957

DOWN

	Change	New Price
b-Carotene, pure, cryst., 1,600,000 to 1,670,000 A units, cns. dms., gram	$0.06	$0.29
Molasses, New Orleans, blackstrap, feed grade, tanks, gallon	0.005	0.11
Pyridoxine hydrochloride, bots., 100-gram lots, gram	0.05	0.245
Silver bullion, ingots, cs., Troy oz.	0.00125	0.9025
Tallow, edible, tanks, dlvd.	0.005	0.115
Tin metal (Straits)	0.025	0.8725

All prices per pound unless quantity is stated.

FATTY ALCOHOL PLANT
ARCHER-DANIELS-MIDLAND CO.
ASHTABULA, OHIO
All equipment was installed by Cunningham-Limp Company also. The large warehouse and office building (right) is a C/L design and construct project.

A Building Experience You can come by... *Easily!*

You will readily appreciate, being in the business, the considerable experience it takes to construct a chemical processing plant such as this. Especially so, when you are told that the complete responsibility, even for the installation of the processing equipment, was assumed by the builder. Such building experience can be the means by which you secure a full dollar's value from every dollar you budget for construction. Possession of it by C/L should certainly demonstrate to you that this company is fully capable of designing, engineering and building most any project you are planning—anywhere.

THESE SERVICES WILL PAY OFF FOR YOU

- **Engineering analyses and reports**
- **Site selection—planning—development**
- **Plant layout**
- **Machinery moving**
- **Materials handling methods and systems**
- **Equipment design—purchase—installation**
- **Building design and engineering**
- **Building construction, including**
  - **Industrial plants**
  - **Warehouses**
  - **Research laboratories**
  - **Chemical process plants**
  - **TV and Radio facilities**
  - **Power plants**
  - **Commercial buildings**
  - **Railroad and Utility facilities**

90% of C/L's business comes from repeat orders

Do you need a new processing plant—a new factory—or office building—or warehouse—or additions to your present facilities? Whatever it is—you will find in Cunningham-Limp Company the abilities and experience to design, engineer and build it for you, and a zeal to assume the entire responsibility within our organization. And perhaps the fact that 90% of our volume comes from old customers* will convince you that we are notably capable of doing so.

DETROIT 2, 3087-H W. GRAND BLVD. • TRinity 3-4000

INDIANAPOLIS, 507 ILLINOIS BLDG., MELROSE 4-2397
KANSAS CITY, MO., 909 SCARRITT BLDG., VICTOR 2-8791
ST. LOUIS 6, 316 LINDELL TRUST BLDG., OLIVE 2-0200

• • • • • •

also Cunningham-Limp Co., Ltd., in Canada

*** In the building business, especially, repeat orders indicate customer satisfaction. Listed here are several of the well-known corporations which have found it profitable to use C/L's design-engineer-build services at two or more "nationwide" locations. The complete list is available, of course.**

ARCHER-DANIELS-MIDLAND CO.
Ashtabula, Ohio
Mankato, Minn.
Wyandotte, Mich.

CHRYSLER CORPORATION
Detroit, Mich.
Rye, N. Y.
Skokie, Ill.

EX-CELL-O CORPORATION
Detroit, Mich.
Lima, Ohio

FORD MOTOR COMPANY
*Birmingham, Mich.
*Indianapolis, Ind.
Lima, Ohio
Livonia, Mich.
Monroe, Mich.
*St. Louis, Mo.
Wayne, Mich.

STORER BROADCASTING CO.
Atlanta, Ga.
Birmingham, Ala.
Detroit, Mich.
Miami, Fla.

SUNSHINE BISCUITS, INC.
Detroit, Mich.
Grafton, Ohio
Jeffersonville, Ind.
Omaha, Nebr.
Pittsburgh, Pa.

***designed by others**

Send For The C/L Book—if you want 58 pages of help and information on building-engineering problems. It shows some cost-saving methods and many of the details that go into make wise building decisions. Request it on your business card or letterhead, please. It will be sent by mail.

FINEST PLASTICIZER ALCOHOL AVAILABLE ANYWHERE

Gulf Isooctyl Alcohol

If you're making esters that require an isooctyl alcohol of highest quality and uniformity, you can't do better than specify Gulf . . . the finest plasticizer alcohol that money can buy.

Three factors make it so. First, Gulf produces its own closely fractionated heptene feed stock. Second, the product is carefully quality-controlled throughout every step of its processing. And third, Gulf's painstaking research and unmatched experience in oxo-chemistry are your assurance of a product that's second to none.

You can get immediate delivery of Gulf Isooctyl Alcohol in tank cars from convenient shipping points at Port Arthur, Texas, Cincinnati and Philadelphia, and in tank trucks from Carteret, New Jersey. May we serve you? Call us today.

GULF ®

QUALITY CHEMICALS *from* PETROLEUM

Acetaldehyde • Aromatics • Ethylene-Propylene-Higher Olefins • Methanol • Oxo Products • Pentaerythritol • Sulfur

Petrochemicals Department
GULF OIL CORPORATION
Gulf Building, Pittsburgh 30, Pa.

LIONEL CRAWFORD

RCI directors* keep a careful check on the changing supply of investor funds, a critical factor as . . .

Reichhold Readies Another Stock Issue

Amid talk this week of an expansion of business activity and a steady upswing in Wall Street—forecast as a possible result of the recent Federal Reserve Board's decision to permit a reduction in the discount rate—Reichhold Chemicals' directors (above) find themselves faced with a tough decision. Their problem: to determine the most financially advantageous time to place a once-postponed offering of 200,000 shares of RCI common stock.

The decision is made more difficult by the fact that RCI's last public offering, which was placed a year ago this month and which made the 30-year-old, White Plains, N. Y., firm partly publicly owned for the first time, netted $4.2 million and was in some measure responsible for a gain in net profits of 47.6% this year over the first three quarters of '56.

Funds for Expansion: Expressing RCI management's confidence in the firm's future, Henry Reichhold, president and chief executive officer, told *CW* that the success of the first issue and the benefits derived from the proceeds give rise to expectations of similar results from the pending offering.

The proposed new issue is expected to net more than $4 million, of which $3.5 million has been marked for capital expenditures. Of proceeds from last year's issue, approximately $3 million financed capital spending.

Capital spending in '58—to be financed entirely with proceeds from the new issue—will include approximately $1.3 million for expansion of existing—and construction of new—chemical production facilities at RCI's Elizabeth, N. J., plant (*table, p. 78*); approximately $400,000 for expansion of resin and chemical production facilities at the Detroit, Mich., plant; nearly $400,000 for expansion of chemical facilities at its Tuscaloosa, Ala., plant; and an undisclosed amount for a new 30-million-lbs./year formaldehyde plant and methanol terminal at Hampton, S.C. The new plant—RCI's 14th in the U.S.—is expected onstream in mid-'58.

Although some $1.2 million of proceeds from the '56 stock offering went into working capital, RCI continues to have larger working capital requirements as a result of increasing sales. For that reason, the portion of new proceeds not used for capital spending will go for working capital.

Over-the-Counter Trade: Reichhold stock is traded in the over-the-counter market. The range of stock quotations from the initial public offering date (Nov. 13, '56) through Oct. 23, '57, was 27 to 20 bid and 27¾ to 20½ asked. The Oct. 23 range was 21¼ to 20¼ bid and 22 to 21¼ asked.

Prior to '56, RCI reinvested substantially all its earnings in manufacturing facilities. Since November '56, however, it has paid three quarterly common stock dividends of 15¢ cash and 1% stock per share. A fourth-quarter dividend of 20¢ cash and 2% stock per share, to be paid this month, was declared.

Reichhold, principal stockholder, has waived any cash dividends payable to him during the period from April '57, through March '61, on 750,000 shares owed him, but held by the company. He owns 803,446 (64.98%) of the corporation's outstanding stock and, together with other directors and officers of the firm, controls beneficially 843,627 (68.23%) of the common stock.

In addition, RCI directors and of-

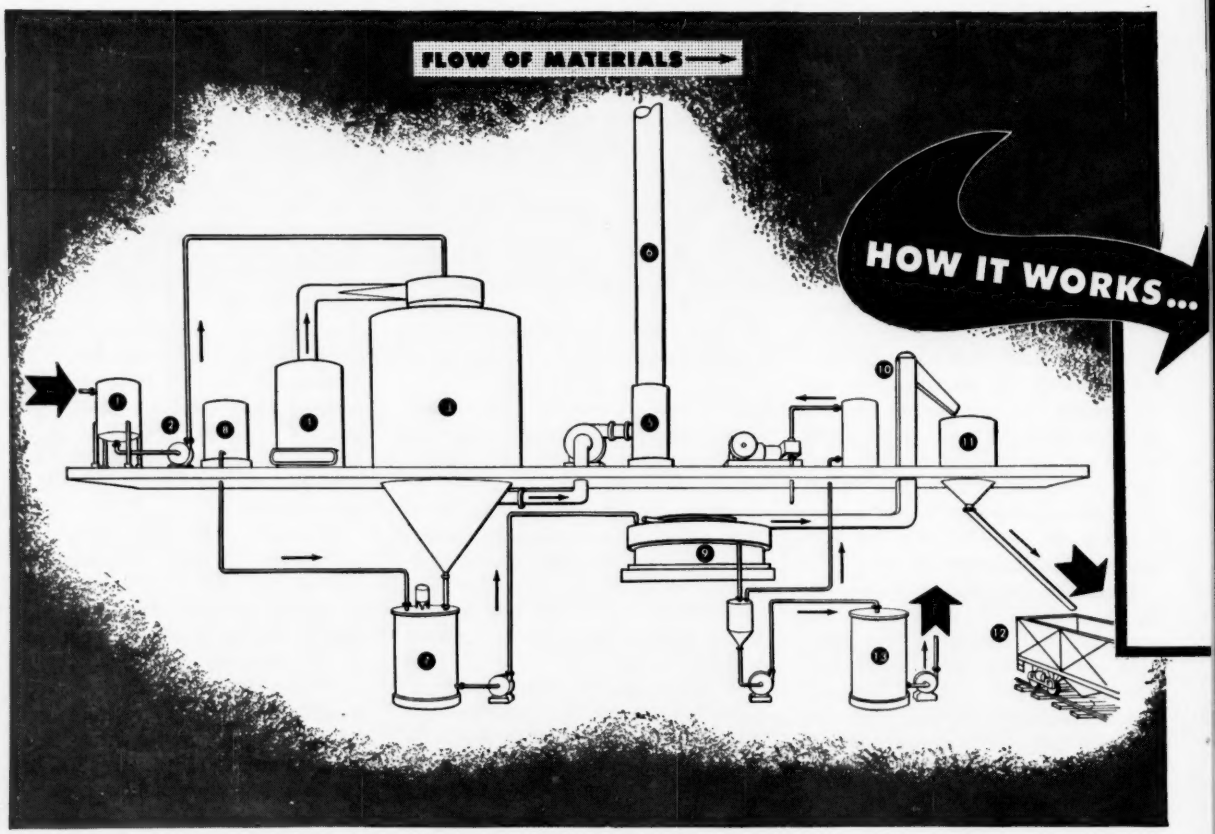
*Clockwise: F. Grosius (back to camera), P. L. Swisher, F. A. Jolles, J. F. Goetz, A. G. Goetz, Reichhold, S. H. Baum and D. B. Tuson.

If you operate a CUT ACID REQUIREMENTS

New continuous process, available from Koppers, of pickling acid used . . . and eliminates waste

FOR OVER A QUARTER OF A CENTURY, wherever a pickling line has been in operation, disposal of spent liquor has been a major headache. But now a new continuous regeneration process—the Koppers Inland-Zahn process— goes a long way toward solving this problem. This system is simple, it is economical, and *it has been proved in actual plant-scale commercial operation in Europe.*

With this process, the only make-up acid needed is the amount consumed in the pickling reaction plus normal losses. *All* available free acid in the used liquor is recovered (up to 50% of the original charge). Labor costs are low—just one man can operate the entire regeneration plant. As a result of these savings, operating costs are substantially below those of any presently available disposal method.



pickling line

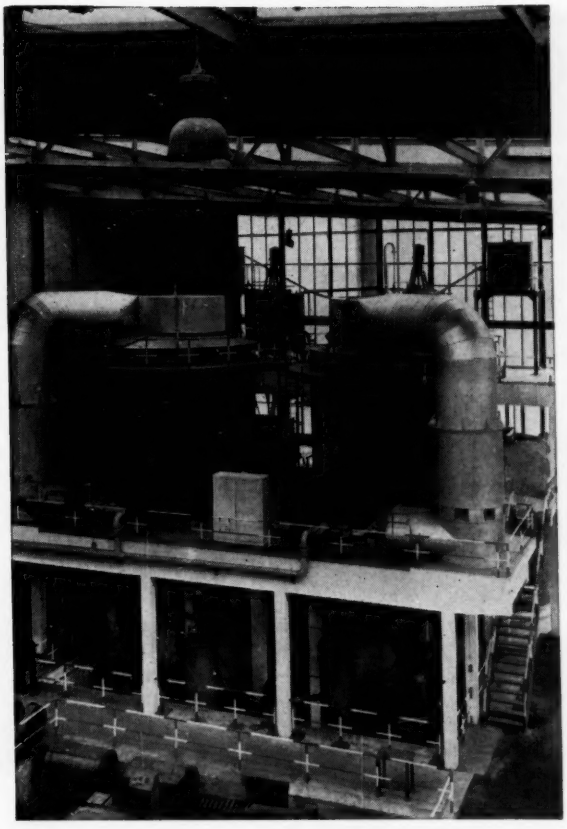
IN HALF!

regenerates up to half liquor disposal problem

PROVED COMMERCIALLY—This process, developed by Inland Steel Company and adapted commercially by Zahn & Co. of West Germany, is now being used successfully in three European steel plants. The benefits achieved include *extremely low maintenance* . . . and more uniform and *higher* acid concentrations in the baths. The latter advantage permits faster steel processing.

NEUTRALIZING PLANTS — The new regeneration process is especially applicable to plants handling 10,000 gallons of effluent, or more, a day. The Chemical Department of Koppers Engineering and Construction Division also designs and builds lime neutralization systems for both large and small pickling operations. Send the coupon for complete information about these and other Koppers Chemical Engineering Services.

Spent pickle liquor (1) is pumped (2) to spray head in an evaporating chamber (3). Here, hot air and flue gases from a combustion chamber (4) concentrate the liquor and cause the ferrous sulfate monohydrate to crystallize out of solution. Vapor laden air is discharged to atmosphere through a mist eliminator and stack (5 and 6). The slurry is dropped into a crystallizing tank (7) where fresh sulfuric acid is added from a metering tank (8). This causes more monohydrate to drop out. The slurry is then separated in a vacuum filter (9) and washed. Salt is conveyed to bins or hopper cars for sale or disposal (10, 11, 12). Mother liquor, containing about 35% acid and 1-2% iron, is pumped to a holding tank (13), ready for dilution and return to the pickling tanks. No reheating is required.



HEART OF THE SYSTEM—This spray dryer concentrates spent liquor to slurry of ferrous sulfate monohydrate crystals suspended in acid. The plant shown here, in Germany, has operated since June, 1954, processing 48,000 gallons per day of waste liquor.

GET ALL THE FACTS!

Koppers Company, Inc.
Engineering and Construction Division
1453 Koppers Building
Pittsburgh 19, Pennsylvania

I would like to receive literature on this new pickle liquor regeneration process . . . and also on Koppers other chemical engineering services. Please send the following:

- ☐ **Regeneration of steel pickling solutions by Koppers Inland-Zahn process.**
- ☐ **Lime neutralization of spent pickle liquor by Koppers.**
- ☐ **"3 Keys to Selecting Your Industrial Contractor," a brochure describing the variety of Koppers construction services and giving reasons why Koppers should build your next chemical plant.**

Name_____

Title_____

Firm_____

Address_____

City_____ **State**_____

KOPPERS

KOPPERS

CHEMICAL ENGINEERING SERVICES

ficers as a group own beneficially approximately 7,766 (9.70%) of the voting securities of Reichhold-Beckacite S.A. (French subsidiary) and 21,925 shares (24.70%) of the voting securities of Reichhold Chemicals (Canada) Ltd.

Needed More Money: Listing his reasons for the first public offering of his company's stock, Reichhold

The Reichhold Network

Argo, Ill.
specialty chemicals

Azusa, Calif.
surface-coating, epoxy and polyester resins, and phenol- and urea-formaldehyde resins

Ballardvale, Mass.
urea- and phenol-formaldehyde resins, formaldehyde, miscellaneous chemicals

Brooklyn, N.Y.
inorganic color pigments

Charlotte, N.C.
urea-formaldehyde resins, formaldehyde, vinyl emulsions

Ferndale (Detroit), Mich.
surface-coating resins, phenol- and urea-formaldehyde resins, polyesters, phthalic anhydride, plasticizers, refining glycerine

Elizabeth, N.J.
surface-coating resins, phenol- and urea-formaldehyde resins, maleic anhydride, phenol-modified rosin products, special resins, plasticizers

Jacksonville, Fla.
urea-formaldehyde resins

Kansas City, Kan.
phenol-formaldehyde resins

Seattle, Wash.
phenol- and urea-formaldehyde resins, pentachlorophenol, formaldehyde

South San Francisco, Calif.
surface-coating resins, phenol- and urea-formaldehyde resins, protein glues, phenol-modified rosin products, plasticizers

Tacoma, Wash.
pentachlorophenol, phenol- and urea-formaldehyde resins, protein glues, hydrochloric acid, formaldehyde

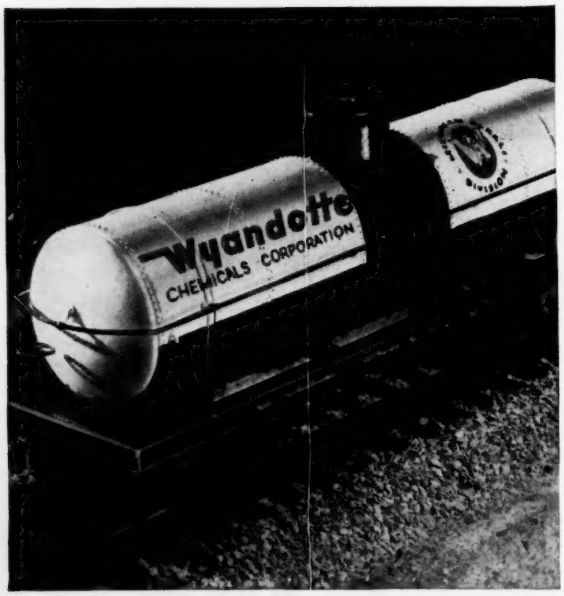
Tuscaloosa, Ala.
phenol, orthophenylphenol, pentaerythritol, formaldehyde, sulfuric acid, surface-coating resins, phenol- and urea-formaldehyde resins, sodium sulfite

Note: RCI also owns 58.9% to 100% of the voting stock of six subsidiaries, in Canada (three), France, Switzerland and Mexico; and less than 50% of six subsidiaries in Argentina, Australia, Brazil (two), England and Japan. The company has licensing agreements with concerns in Germany, Holland, Italy, South Africa and the Philippines (*CW, June 15, p. 61*).

New Wyandotte chart helps you choose between 50% and 74% caustic soda

Like to make a definite decision whether or not switching from 50% to 74% caustic soda would be profitable for your business?

To make this task easier for you, Wyandotte has devised a unique chart which helps you plot your economic position, and shows you whether switching from 50% to 74% liquid-caustic solutions can benefit you in your operations.



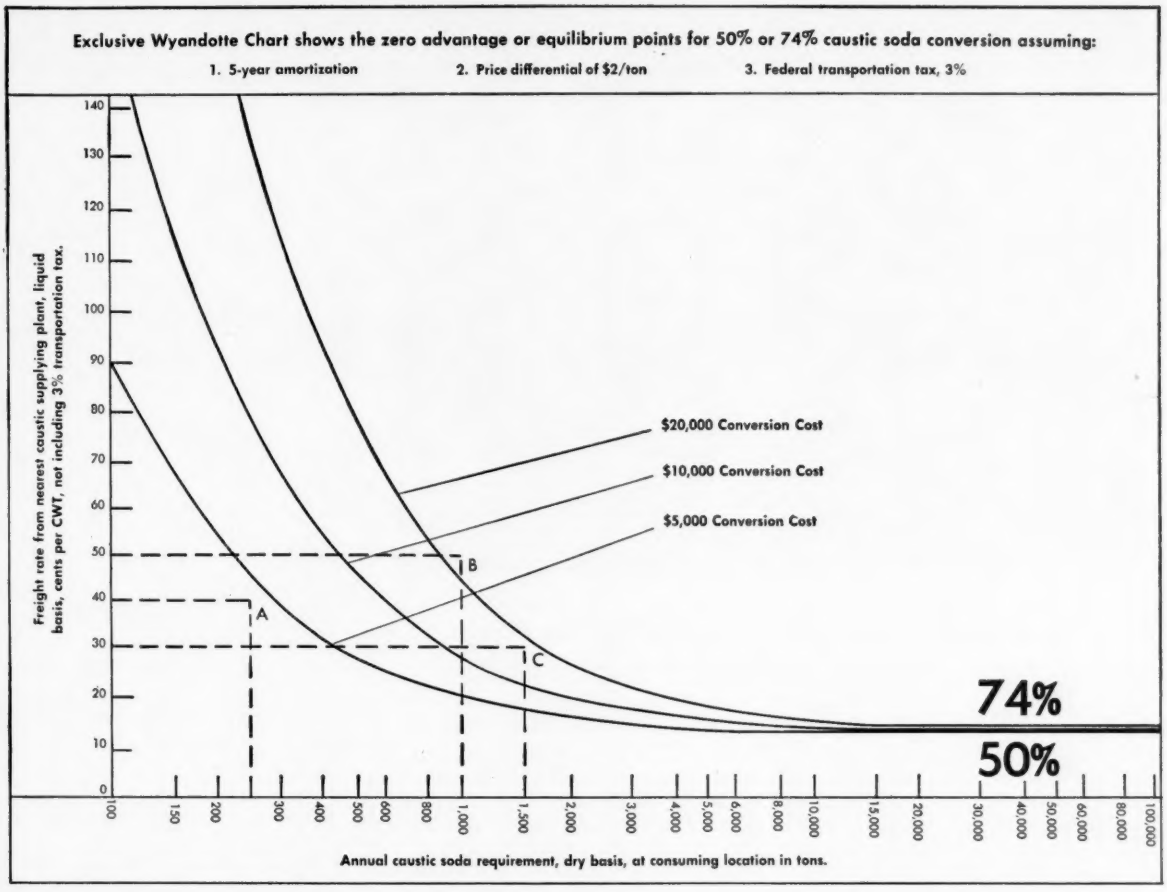
Wyandotte's caustic liquor is loaded while hot. This heat, plus heavy insulation, insures users against solidification.

In choosing, there are many variable factors which you must consider: the cost of concentration; end use of the caustic soda; existing storage and handling facilities; quantity of caustic consumed; plant location.

While there are definite freight savings to be realized from using 74% caustic (less water must be shipped), if the final use of the caustic requires a dilute solution, equipment must be provided to dilute the tank car of 74% liquor. And since the dilution operation results in approximately 70% more total liquid, additional storage space may be needed.

A survey of your operations will reveal the possible savings that may be made by switching to 74% liquid caustic. Even though you may have surveyed operations previously, increased use of caustic or changes in freight rates may well mean you can save money now by switching to 74% liquor . . . it is wise to plan periodic surveys of your caustic requirements.

Our technical service representatives are experienced in solving problems concerning the type of caustic soda to be used, and will gladly aid you in making the necessary economic studies. For further information and help in choosing which is best for your business, get in touch with us today. *Wyandotte Chemicals Corporation, Dept. 565, Wyandotte, Michigan. Offices in principal cities.*



HOW TO USE CHART

EXAMPLE A: Freight from nearest producing point to consuming point is 40 cents per hundredweight. Annual consumption by consuming plant is 250 tons caustic soda, dry basis.

ANSWER: Because Point A lies to the left of the curves, the plant should purchase caustic soda as a 50% liquid.

EXAMPLE B: Freight from nearest producing point to consuming point is 50 cents per hundredweight. Annual consumption by consuming plant is 1000 tons caustic soda, dry basis.

ANSWER: Because Point B lies to the right of the curves, the plant should purchase caustic soda as a 74% liquid, even though additional equipment investment of as much as $20,000 might be found necessary.

EXAMPLE C: Freight from nearest producing point to consuming point is 30 cents per hundredweight. Annual consumption by consuming plant is 1500 tons caustic soda, dry basis.

ANSWER: Because Point C lies between the $10,000 curve and the $20,000 curve, the plant should purchase 50% caustic soda if the additional investment necessary exceeds about $15,000, or should purchase 74% caustic soda if the additional investment is less than about $15,000.

NOTE: The amount of additional investment needed is based primarily on how much of the following items are presently part of the caustic soda unloading, storage and handling facilities at the consuming plant:

1. Storage capacity: A 10,000-gal. tank car of 74% caustic soda produces about 17,000 gals. of 50% liquor.
2. Dilution facilities: Water pump, caustic-soda pump, line-temperature gauges necessary to dilute 74% to 50%.
3. Cooling facilities: The hot 50% caustic soda must be cooled to about 110°F.-120°F. prior to storing the 50%.
4. Contamination: Some consuming plants would need protective linings or materials in the equipment to prevent contamination; thus, all-nickel equipment might be needed in some cases.

said the firm simply needed more money for expansion than it could earn. The question was debated for a number of years. "First, we had to prove ourselves as a successful company," Reichhold said.

Because of taxes, retained earnings were getting so small, Reichhold explained, the company had to get money elsewhere. "Our expansion was the kind that had to be done, regardless of market conditions."

The company's substantial growth and record profits during the first nine months of this year is attributed by RCI management to several factors in addition to the $4.2 million, including:

- Spectacular growth of the resins business to a significant position in the chemical industry.
- RCI's decentralization of plants —begun several years ago—to help supply customers faster and at less cost.
- Limiting the firm's business to plastics, resins and basic chemicals.
- Organizationally putting the corporate "house" in shape.
- Providing needed facilities and bulk raw materials by putting money into expansion and working capital.

Chemical Sales Efforts: H. W. Duval, sales manager of RCI's chemical division, shares Reichhold's bullish attitude about the future; and as part of the company's recent growth picture, he points to division sales of $15 million for the first nine months of '57—a 31.5% increase over the same period in '56.

"Since November '56," he points out, "our salesmen have known they would have definite basic chemical capacity to depend on, and as a result they can sell with confidence. Also, the chemical division now has a policy of encouraging salesmen to sell the firm's chemical products."

Plans, Duval says, call for the chemical division — which accounts for 20% of RCI's business—to hike sales a minimum of 30% in '58, 25% in '59. The leveling off will be due to company sales policy and the supply of chemicals.

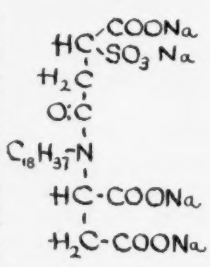
Henry Reichhold admits that "going public" meant certain problems of adjustment for him, but he doesn't regret the change. "For one thing," he said, "corporate flexibility hasn't decreased as I was afraid it would. And as far as control of the company is

AEROSOL® 22

Surface Active Agent

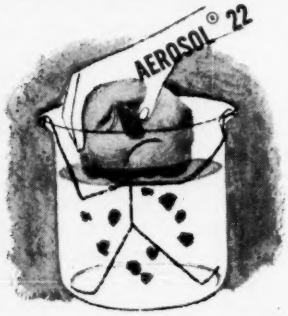
DELIVERS The Promise of an Unusual Surfactant Molecule!

AEROSOL 22 is unsurpassed or unequaled in performance by other commercial surface active agents in the many important respects detailed below. These outstanding properties are a result of a highly active molecular structure that combines a sodium sulfonate and three sodium carboxy groups with an amide linkage and an 18-carbon aliphatic. In spite of a molecular weight of 653, it is completely soluble in water—yet its hydrophobic properties are maintained in high-temperature ranges where many surfactants lose their effectiveness. This molecular "powerhouse" promises unusually good results—and *delivers* them in a wide variety of applications.



Solubilizing the "Insolubles"

AEROSOL 22 goes well beyond emulsification in putting certain compounds that are normally allergic to water into stable "solutions." It

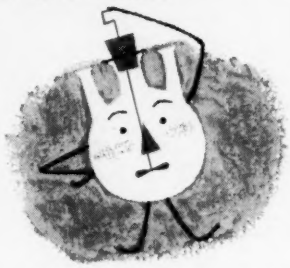


will also increase the solubility of certain soaps and detergents in aqueous media containing high salt concentrations. It is almost impossible to "salt out" AEROSOL 22 from its aqueous solutions by adding salts containing monovalent cations—and this stability to electrolytes is largely passed on to the materials it takes into solution. For example, high molecular weight naphthenic and cresylic acids are made soluble in 25% caustic soda.

Emulsion Polymerization Made Easy!

In this popular polymerization technique, much depends on the proper choice of surface active agent for a particular monomer system to assure:

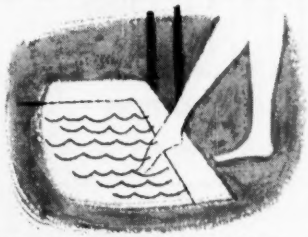
1. Rapid reaction rate.
2. Storage stability with no drop in surface tension—no viscosity increase.
3. No rewetting or water-spotting of dried coatings or films.
4. Excellent rub stability.
5. Good film color.



Here is where the all-round characteristics of AEROSOL 22 combine to do an excellent job, satisfying the list above—and more. Lots of up-to-date information on this rapidly expanding production technique is available through your Cyanamid representative. Perhaps you'll be interested in the synergistic action of other AEROSOL surface active agents used in conjunction with AEROSOL 22 to give even higher levels of polymerization performance.

Wetting . . . to a Degree

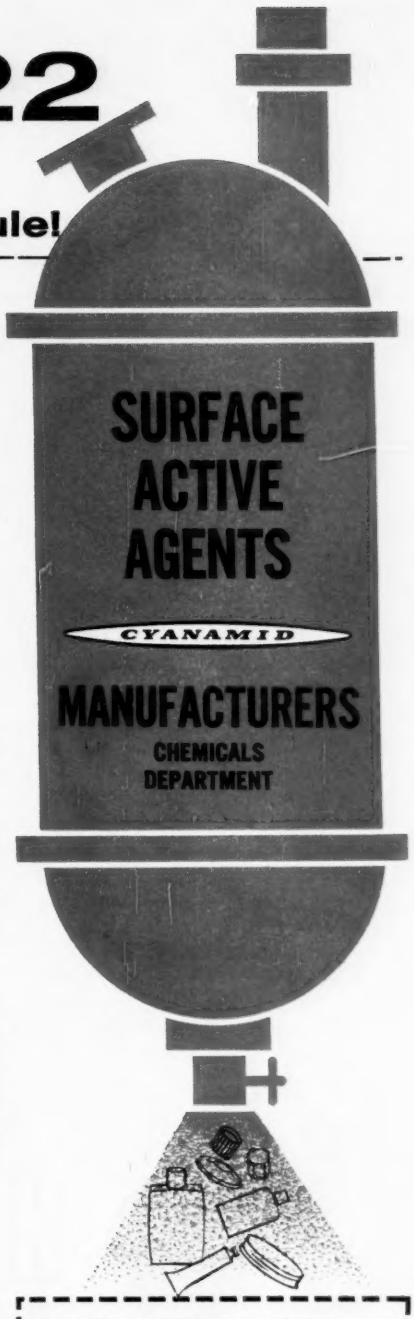
The surface tension of water to which 0.1 to 2.0% AEROSOL 22 has been added varies from 40-41 dynes only. This controlled wetting action is particularly good for writing and drawing inks since the degree of wetting is not significantly affected by the evaporation or dilution these inks undergo. In rug and upholstery cleaners, AEROSOL 22 does not wet through and soak the material, but



instead contributes to thorough on-the-surface cleaning. Wherever wetting is to be kept within bounds, AEROSOL 22 is worth investigation.

Sorry . . .

We haven't space to discuss in detail the anti-gelling, demulsification, dispersion and other characteristics. But they're detailed in a 20-page booklet—and the coupon on the right will bring it to you.



American Cyanamid Company
Manufacturers Chemicals Department
30 Rockefeller Plaza, New York 20, N. Y.

Please send me:

- ☐ Bulletin on AEROSOL 22 Surface Active Agent
- ☐ Sample of AEROSOL 22

Name_____

Company_____

Address_____

City_____ Zone____ State_____

In Canada: North American Cyanamid Limited, Toronto and Montreal

concerned, there's no danger of losing control if you have good management, even though you own less stock."

Concerning the company's success during its first year as a public corporation, there's no argument. Big question in the minds of RCI management and stockholders—and a watching industry—is, "Will the next year and a second stock offering bring the same spectacular results?"

IDEAS

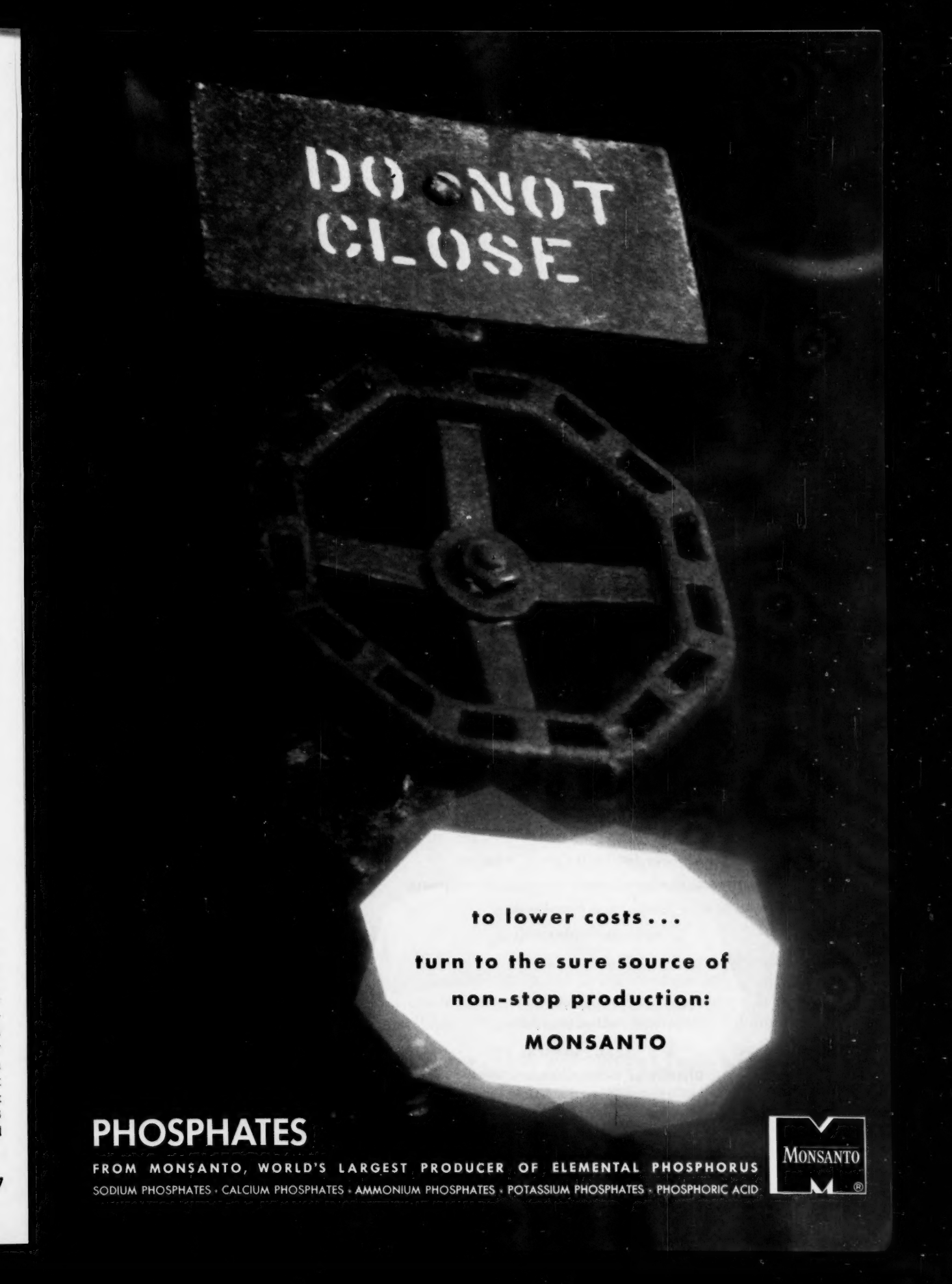
Corporate Life: The stereotype of the "corporation man" is as patently false as that of the absent-minded professor or the long-haired scientist, according to Du Pont's view in a newly published 32-page illustrated booklet, "The Story of Life in a Large Corporation." The booklet—designed to show stockholders and employees that corporation employees and owners are "just like anyone else"—points out that the 500 largest U.S. corporations alone employ nearly 9 million people, and that a total of perhaps 35 million are directly dependent upon paychecks from these corporations.

•

Office Christmas Parties: Odds are almost three to two that your company will have an office Christmas party this year, according to a survey of 1,000 business concerns across the nation, and it's quite likely that the company will foot the entire bill. These facts and others are revealed in a survey, begun shortly after the '56 Christmas season, by National Office Management Assn. (Willow Grove, Pa.). The survey shows that only about one-third of the firms will have parties on company property, that the majority will go to restaurants, hotels or clubs. And coupled with the trend toward more office Christmas parties is this: once a firm gets the habit, chances are that company-sponsored parties will become an annual event.

•

Fingerprinting Readers: Management men seeking to measure readership of company publications should consider the solution adopted by *American Druggist* magazine, which hired a detective agency to check prints on 1,790 pages of copies that had been in circulation, found 3.3 different prints per page, considered it high readership.



to lower costs . . .

turn to the sure source of

non-stop production:

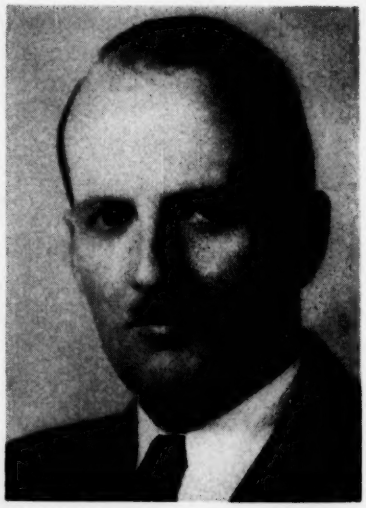
MONSANTO

PHOSPHATES

FROM MONSANTO, WORLD'S LARGEST PRODUCER OF ELEMENTAL PHOSPHORUS

SODIUM PHOSPHATES · CALCIUM PHOSPHATES · AMMONIUM PHOSPHATES · POTASSIUM PHOSPHATES · PHOSPHORIC ACID

MONSANTO ®



Director McLaughlin: Local government will deal with atomic safety.

Atomic Safety Steps

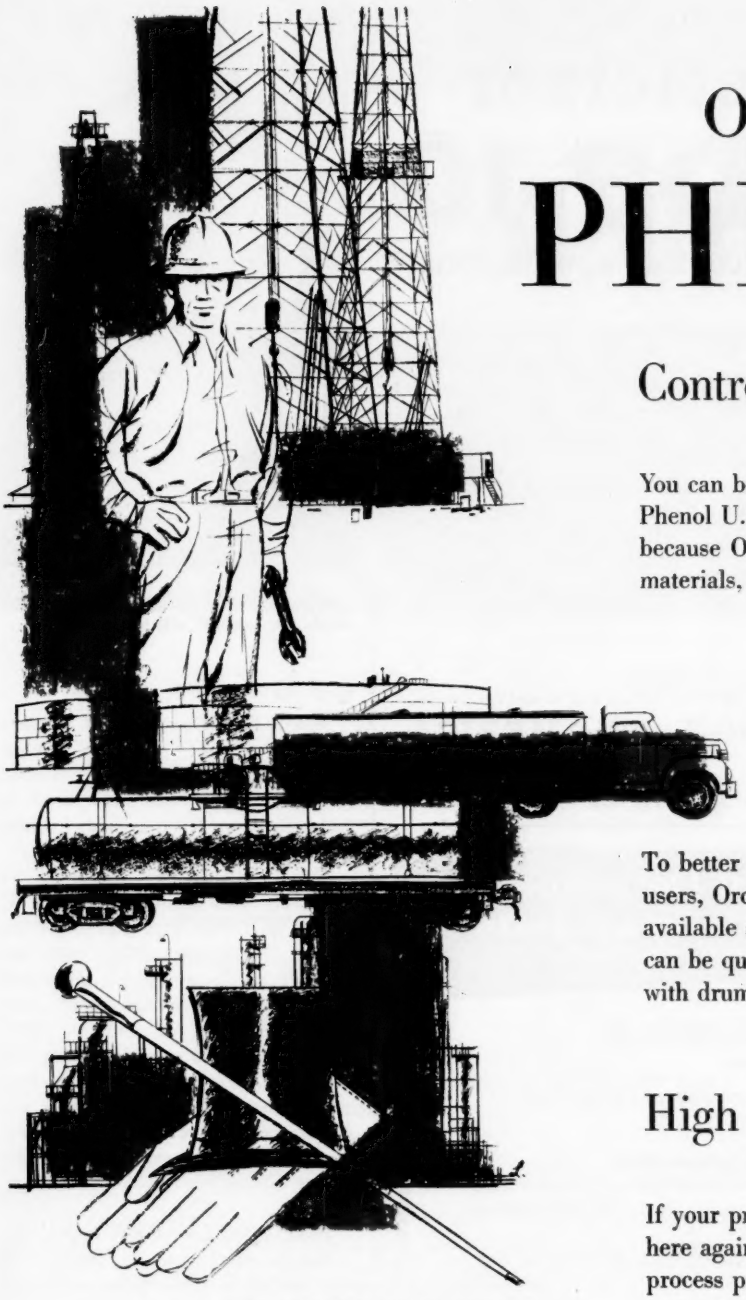
Shutdown measures being taken this week at a Mt. Kisco, N.Y., plant that salvages radioactive materials are focusing attention on the relationship of local government to the matter of radiation and atomic hazards. The salvage company, Canadian Radium and Uranium Corp., has been charged by the New York State Labor Dept. with alleged violations of state safety standards. Company management reports the plant is being shut down for economic reasons.

County Program: The case has been a prime factor in the move by Westchester County's health department (Mt. Kisco is in that county) to set up a program to supervise radiation safety measures at companies with operations in the county. This includes Consolidated Edison Co., a utility company, which is building an atomic-electric plant in the area.

Under the direction of county sanitation director Richard McLaughlin, the program will bring under study all large and small users of radioactive material in the county.

For process management, the Westchester program points up the expectation that, as utilization of atomic materials grows, local governments will be seeking a stronger hand in the direction of its development.

And management, with the prodding of unions, will devote more and more time to dealing on local levels.



Oronite®
PHENOL

Control of raw material

You can be assured of Oronite as a dependable Phenol U.S.P. source, now and years ahead, because Oronite has complete control of raw materials, starting with crude petroleum stocks.

Complete distribution

To better serve Eastern and Midwestern Phenol users, Oronite has bulk distribution terminals available at key consuming points. Consumers can be quickly served by tank car, tank truck or with drum shipments.

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UNITED PRESS PHOTO

Judge Ryan: Dismisses a suit against ADM as 'wholly without merit.'

LEGAL

ADM Suit Dismissed: A breach-of-contract suit against Archer-Daniels-Midland in U.S. district court (New York) has been dismissed by Judge Sylvester Ryan as being "wholly without merit."

The suit—asking judgment of $171,600—was brought this fall (*CW, Sept. 7, p. 57*) by Eugene Hirsch (New York). He charged ADM used certain process formulas and know-how in violation of their agreements, thus "cheating and defrauding" him. Hirsch claimed to have discovered and developed a caulking composition used in making emulsion vehicles and paints, and to have delivered information on the development to ADM's agents.

•

Prescription Law Case: In the first sentences meted out in New York City under a prescription law that went into effect six years ago, two pharmacists have received jail terms for over-the-counter sales of prescription drugs. The defendants—Jacob Bosser and Sheppard Greenberg—were sentenced in U.S. district court (New York).

Bosser—owner of Bosser Pharmacy (Bronx, New York City)—was sentenced to one year in jail and fined $3,000. Greenberg, his partner, was given six months in jail and fined $1,000. The men were selling Benzedrine, Seconal, Dexedrine and Gantrisin without prescription.

WIDE WORLD

Negotiator Carey: Doubling the pressure for quick settlement.

AFL-CIO's New Tactic

A new guide to policy in AFL-CIO support of its member unions seems apparent in the merged organization's recent step toward taking a direct part in wage negotiations.

Last week, for the first time, the combined American Federation of Labor and Congress of Industrial Organizations brought the negotiating weight and experience of two vice-presidents of the federation to bear upon current contract talks between Retail Clerks International Assn. and Montgomery Ward & Co.

The vice-presidents — Joseph Keenan, secretary of the International Brotherhood of Electrical Workers, and James Carey, president of the International Union of Electrical Workers—will assist the clerks in hastening settlement of contracts with Montgomery Ward. They were assigned to the job, according to Carey, "to see justice done. When a big corporation makes a quick deal with a corrupt union and then drags out negotiations with a decent union for months without budging an inch, it is a disservice to the entire nation."

Long History: Carey apparently referred to the company's quick settlements with the powerful Teamsters Union, headed by embattled Jimmy Hoffa, although it has failed to settle with the clerks since talks started last July.

The new tack by the AFL-CIO indicates to many observers a new feel-

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ADMINISTRATION

ing in its top leadership: firms whose employees are represented in a single location by two or more unions—as is the case with many process companies—may find federation "trouble shooters" on the spot if one union seems to be receiving treatment strikingly dissimilar to treatment given another.

LABOR

Union Rejection: Employees of Shell Chemical's synthetic rubber plant at Torrance, Calif., rejected overtures of two unions for bargaining rights. They voted 475 for no union, 213 for OCAW, and 12 for International Union of Operating Engineers. The engineers had sought to represent boiler and powerhouse employees. OCAW intervened to try for a plant-wide local, and when the engineers failed to get a majority, their votes were carried over to those for OCAW.

•

Cement Settlement: Arizona Portland Cement Co. has agreed to a 6% wage increase for 170 employees at its Rillite, Ariz., plant. The agreement capped four days of negotiations with United Cement, Lime and Gypsum Workers local. The contract also calls for higher differential pay for workers on night and "graveyard" shifts and extra pay for Sunday work.

•

Rubber Package: United Rubber Workers Local 553 (AFL-CIO) and the U. S. Rubber Co.'s Naugatuck chemical-resin plant at Painesville, O., have signed an agreement calling for a 15¢/hour raise package, union shop, seven paid holidays, a vacation plan, paid funeral leave time, makeup pay for jury duty and two weeks of annual armed forces training time. Wage increases are retroactive to Sept. 28.

•

Sickness Insurance: The New Jersey advisory council on disability benefits has recommended to Governor Meyner an increase from $35 to $50 a week in maximum benefits under the state's disability benefit law. It also proposed that the taxable wage base for disability insurance purposes be raised from $3,000 to $4,200/year. At the present rate, employees making $3,000 pay $15. The new base ($4,200) would raise the contribution to $21.

Exceptionally high purity of new G-E Fused Magnesium Oxide makes it ideal for use in special atomic energy applications. This new refractory material is also being used to give longer life to heating elements in electric frying pans and other appliances.

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ADMINISTRATION

KEY CHANGES

Huskel Ekaireb, Leo Fernandez and **Alfred D. Freund,** to vice-presidents, Merck Sharp & Dohme International, Merck & Co. (Rahway, N.J.).

John R. Brown, Jr., to director and vice-president in charge of research and development, Colgate-Palmolive Co. (New York).

George E. Carlson, to board chairman; and **Robert W. Carlson,** to president; Minnesota Rubber and Gasket Co. (Minneapolis).

Gerald L. Moran, to general manager, Chemical and Metallurgical Division, Sylvania Electric Products (New York).

Ernst T. Theimer, to director of research, van Ameringen-Haebler (New York).

K. H. Rowland, to vice-president—production, Union Carbide Chemicals Co.; and **H. D. Kinsey,** to president; **R. N. Graham** and **W. F. Reich, Jr.,** to executive vice-presidents; **N. C. Babcock, L. J. Bowditch, G. T. Felbeck** and **E. P. Shetter,** to vice-presidents; Union Carbide Olefins Co.; both divisions of Union Carbide Corp. (New York).

J. G. Affleck, to manager, Rubber Chemicals Dept., Organic Chemicals Division, American Cyanamid Co. (New York).

H. G. Reid, to president and director, Imperial Chemical Industries (New York) Ltd.

William H. Davis, to chemical sales manager, Petro-Tex Chemical Corp. (Houston, Tex.).

Patrick J. Keating, Jr., to director of research; and **John K. McKinley,** to assistant director of research; Texaco Research Center (Beacon, N.Y.).

KUDOS

To **William J. Kroll,** consulting electrochemist-metallurgist (Corvallis, Ore.), the 1958 Perkin Medal of the American Section of the Society of Chemical Industry.

DIED

John J. Dowdle, III, 39, vice-president, Great Lakes Carbon Corp. (New York), at Greenwich, Conn.

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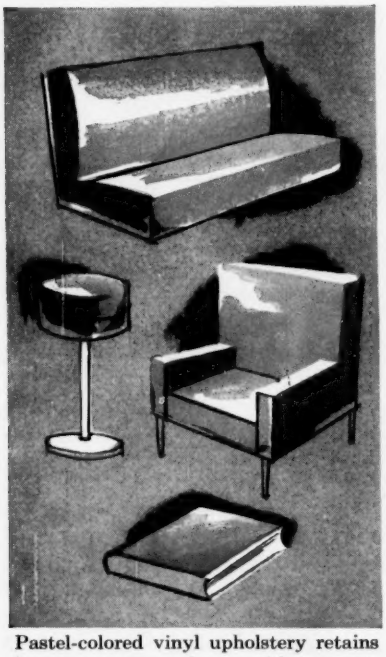

Pastel-colored vinyl upholstery retains its new appearance longer with top coatings made with THF.

THF-applied top coatings give pastel-colored upholstery rich luster and high soil resistance

Today's color revolution is producing smartly turned-out auto interiors and home furnishings in decorator pastel colors. As a result, specifications for soil and stain resistance in the supported fabrics and vinyl sheeting used in these applications are being given even greater emphasis.

Modern tastes also dictate that these materials must have the luster of leather . . . plus high resistance to tearing, abrasion, flexing, moisture, chemical and sunlight attack.

Manufacturers of automobile and upholstery fabrics have found that top coatings made from high molecular weight polyvinyl chloride resins fill all these requirements. That's where the powerful solvent action of Du Pont tetrahydrofuran comes in. At room temperatures this colorless liquid dissolves these resins, which are practically insoluble in other low-boiling solvents. Tetrahydrofuran's high solvent power and rapid solvent action assure good adherence of top coats and permit operation at increased machine speeds.

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Efficient recovery methods cut costs. Efficient recovery of THF from solvent applications greatly reduces the cost of this superior solvent. To help you, Du Pont is prepared to assist in the design of both carbon adsorption and water-scrubbing recovery systems.

Availability. Tetrahydrofuran is available in drum, carload-drum, and tank-car quantities. Working samples also are available to manufacturers interested in investigating THF-applied top coatings. Du Pont's technical force will be glad to work with you in developing your particular application of THF. For the complete THF story, write to:

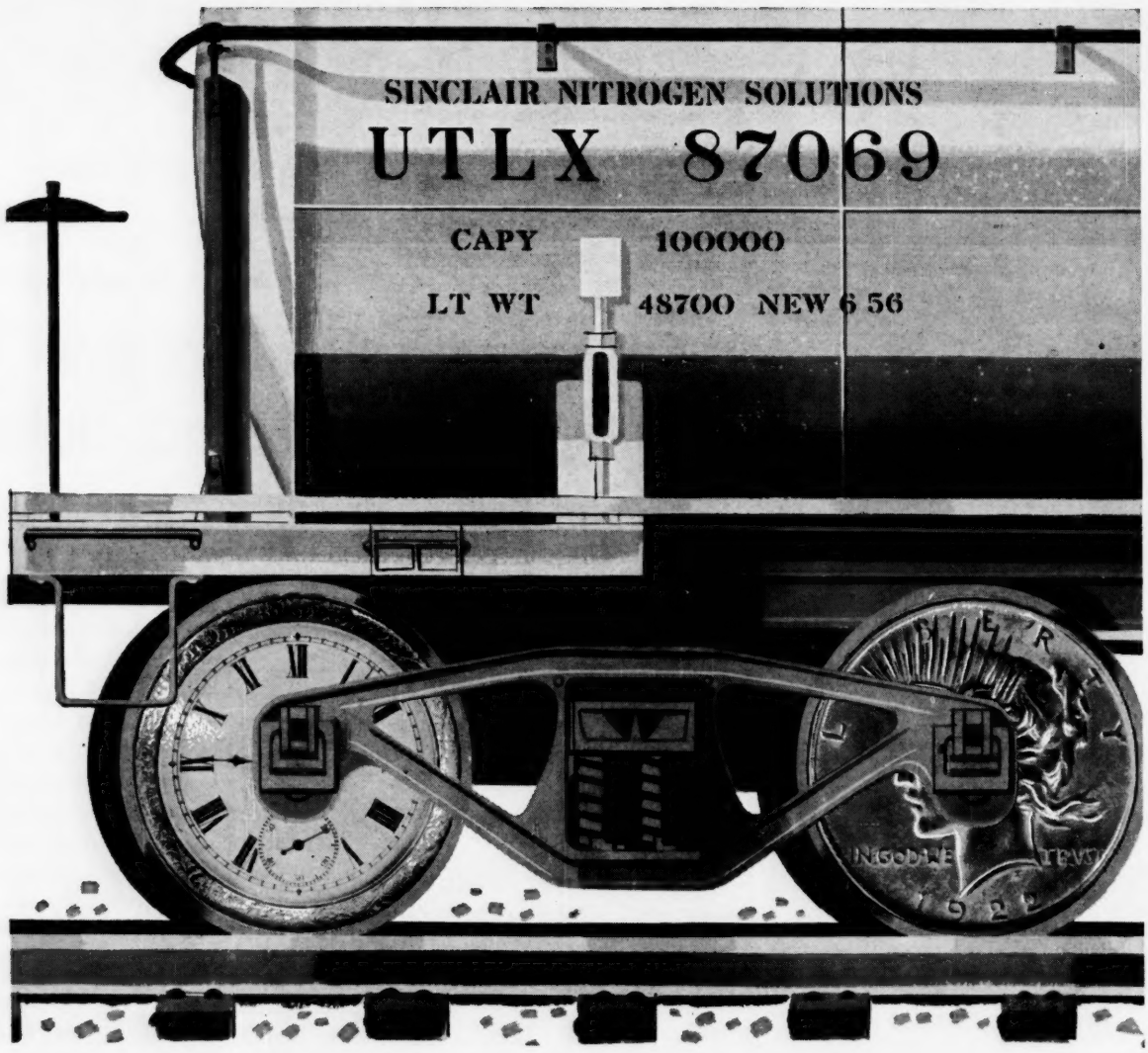
E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department
Chlorine Products Division CW-11
Wilmington 98, Delaware

PHYSICAL PROPERTIES of THF

Appearance	Colorless, mobile liquid
Odor	Etherlike
Molecular weight	72.10
Freezing point	−108.52°C.
Boiling range	65°-67°C.
Flash point (Tag closed cup)	6°F.
Vapor pressure, mm Hg. at:	
25°C.	176
45°C.	385
66°C.	760
Solubility	miscible with water, soluble in most organic solvents.

OTHER USES for THF

Versatile THF is also used as solvent in PVC adhesive formulations, in casting of PVC film, and in applying coatings of PVC and "Saran" resins to films and fabrics. It is finding increased use as a reaction solvent. For specific information on any of these uses write to the address on the right.



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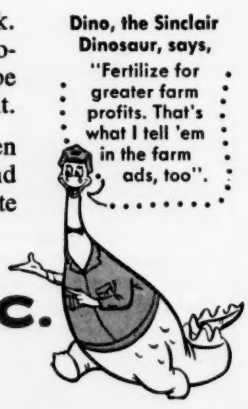

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Checklist on Bactericidal Additives for Textiles

Manufacturer	Tradename	Some Users	Estimated Cost of Chemical
American Cyanamid	Cyana	Two textile mills testing	—
Bex Industries, Inc.	Corobex 50	S. and R. Infants Wear Co. Inc. M. J. Fassler and Co. Inc. (hospital sheeting) Dualoy Inc. American Hospital Supply Corp. Al-Lon Mfg. Co. Inc. Ross and Roberts Inc. Over 100 companies testing	¾¢/lb. of treated fabric
Carolina Aniline and Extract Co.	Anti-Pers Al 1	20-25 companies testing	2¢/lb. of treated fabric
Permachem Corp.	Permachem	Harte and Co. Inc. (vinyl films) Ohio Falls Inc. (canvas, awnings, etc.) Rudin and Roth (hosiery)	1-1½¢/lb. of treated fabric
Scientific Oil Compounding Co., Inc.	SOCCI 6618	Sears, Roebuck J. C. Penny	2¢/lb. of treated fabric
U. S. Process Corp.	Sanitized	Spring Mills Canadian Celanese Ltd. J. P. Stevens & Co., Inc.	2¢/lb. of treated fabric

Big Future for Textile Germ-Killers?

The spring catalog of Sears, Roebuck and Co., now on the printing presses, should be particularly interesting to chemical specialties makers. Reason: the catalog features a variety of textile products incorporating built-in purifiers, i.e., chemical additives that keep various textile products germ-free for protracted periods. There's been some semisuccessful promotion of these residual bactericidal finishes in the past, but Sears' promotion may signal big-volume usage for them.

The Sears spring catalog will feature, among other items, Kenisan (Sears' trademark) arch supports, vinyl and acetate shower curtains and an aerosol* for do-it-yourself shoe-treating.

Not featured in the spring catalog but planned for the spring retail trade are Kenisan-treated yardgoods (cotton, acetate, wool felt) and mattresses.

Also for '58, Sears will probably have available under-rug cushioning incorporating an antimetabolite—a substance that retards or prevents the growth of organisms. And for future marketing is Kenisan-treated pillow ticking (now being test-marketed in the Southwest and Southeast), and possibly a line of men's socks, pillow cases, coat linings, sheets, heating pads, underwear, canvas awnings and bath sets.

Kenisan is a generic name, not a specific chemical formula, a Sears representative told *CW*. It's a family of treatments based on SOCCI 6618, a product supplied by Scientific Oil Compounding Co. (Chicago). SOCCI 6618 is a concentrated white liquid made of two familiar biocides—hexachlorophene and *o*-phenylphenol. Hexachlorophene is effective against a large group of bacteria, but not against Gram-negative types, while *o*-phenylphenol is effective against the Gram-negative bacteria and fungi.

Twenty Years on the Way: Scientific Oil is far from being the first with a combination bactericide-fungicide for fabrics (*CW, March 23, p. 44*). U.S. Process (New York) claims it was on the market over 20 years ago with such a process, tradenamed Sanitized. Permachem Corp. (West Palm Beach, Fla.) and Bex Industries (New York) have been selling fabric finishes to textile mills for the past year. American Cyanamid came up with Cyana (nonfungicidal) a year ago. A more recent entry is Carolina Aniline and Extract Co. (Charlotte, N. C.).

All the companies use about the same sales pitch: the chemical has no effect on the textile hand, it's applied in regular finishing operations without special equipment, it has no undesirable odors, is nontoxic, has no effect on the dye, is effective against both Gram-negative and Gram-posi-

*Sears' aerosol was available in the firm's fall and winter '57 catalog, under the name Kenisan. This do-it-yourself treatment isn't permanent—lasts six weeks to six months. Cost: $1.37 for a 12-oz. can.

SPECIALTIES

tive bacteria, is mould- and mildew-proof.

Carolina Aniline makes this reservation about its product: Anti-Pers Al 1 is effective only in the presence of moisture, due to its electrobiological properties (water acts as the electrolyte). Silicone compounds, it says, also impair the efficiency of its product.

Staying Power: Durability claims differ substantially. Sears claims a minimum durability of 20 washings at a temperature of 140 F, under normal washing machine agitation. Bex says that its Corobex 50 will stand up under 50 washings. Cyanamid claims 25 washings for cotton, 10-25 for a cotton-Dacron blend, somewhat fewer for wool and most synthetics. Carolina Aniline says it's still testing washability but that most fabrics stand up under 20-25 washings. Permachem treatments are claimed to withstand 15-20 washings, U. S. Process, five. Makers agree that most treatments are more resistant to dry cleaning than to washing.

Composition Mystery: Manufacturers of the textile treatments vary widely in their eagerness to describe the chemical composition of their products. Scientific Oil, for example, explains that the chief components of its SOCCI 6618 are hexachlorophene and *o*-phenylphenol, and says its formulation must vary with the application: e.g., mattress padding is treated with plain 6618, but outside ticking, which must be stable in ultraviolet light, requires a special formulation of benzoic acid. Carolina Aniline also uses hexachlorophene, but its formula employs acrylic polymers as binders.

Bex tells *CW* that it uses quaternary ammonium salts in its Corobex BI (for nonwashable items) and mercurial compounds in its Corobex 50 (for washable items). Sanitized treatments, trade sources say, also make use of the quats. There's one difficulty in application of the quats to laundered textiles: because they are cationic, while over 70% of commonly used syndets are anionic, "a neutralization reaction occurs, which destroys the effectiveness of the bacteriostat."

Other companies won't say what is in their products, but emphasize what they do not contain. American Cyanamid says no mercurial compounds are used in its Cyana; U. S. Process stresses that no metallic compounds go into Sanitized products; Permachem

says its textile treatment does not use colloidal silver or quaternary ammonium salts.

Costs and Quantities: Cost of using the materials varies, obviously, with each specific product, but most makers have computed an average (*see table, p. 97*). Specifically, Sears says that for the chemicals alone used for underrug cushioning it must pay some 0.3¢ for each pound of fabric treated. Pillow case treatment costs more: 5-6¢ for each pound of fabric. Carolina says the addition of its material will cost a user about 2¢/lb. of fabric treated; it gives a figure of 7-10¢ as the cost of treating a dozen pairs of hosiery.

Quantities used also vary for each product. Scientific Oil gives this as a typical formula for handling 200 lbs. of fabrics: 5 lbs. of SOCCI 6618, 5 lbs. of resin emulsion (or other binder) and 90 lbs. of water. Bex recommends 1 gal. of its Corobex 50 for 800 lbs. of material.

Weakening Resistance: A few makers of bacteriostatics feel that they have an uphill fight ahead of them trying to convince the textile people that their products are more than ales gimmicks. Others are more optimistic, feel that the increasing use of treated fabrics by hospitals will simplify the job of selling.

One sign of a healthy future for bactericides is the possible entry into the field by large firms such as Upjohn and Pfizer. Pfizer tells *CW* that it is conducting a series of preliminary tests to see what effects its antibiotics may have on textiles, and Upjohn is experimenting with two potent antibiotics.

Although Parke, Davis says it's not yet in the field, it was recently visited by Du Pont representatives looking for a chemical that would have an antibacterial effect on nylon. Monsanto tells *CW* that reports that it is working on these agents for textiles are "inaccurate."

At this stage, the whole idea of purifying finishes, while not exactly new, is still a novelty to the U.S. consumer. It's still in the "a little something extra" stage, which helps sales. But if the idea of having germ-free clothes and personal items catches on, the American people, with their penchant for turning luxuries into necessities, might make this item a profitable, high-volume textile specialty within the next five years.

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A Turn to Polishes

The trend away from using wax in floor polishes, replacing it with synthetic resins, will undoubtedly be accelerated by development of two new products by Reichhold Chemicals. This week, the firm (see p. 75) showed a pair of new synthetic resins, says they make possible for the first time manufacture of nonwax self-polishing floor finishes that do not water-spot, yet are easily removed when necessary.

Designed to replace shellac in polishes, the new resins could have a terrific sales volume if they're fully accepted. An estimated 30 million lbs. of shellac are used annually by the $76.4-million self-polishing floor wax industry.

The Reichhold resins, Waterez 1550 and 1551, are alkali-dispersible, modified alkyds, made by esterifying phthalic anhydride with polyols. They are hard, friable materials, similar to dry shellac in appearance, but are lighter. Reichhold proposes to sell the resins for 50¢/lb., about 8¢/lb. cheaper than the grade of shellac they are designed to replace.

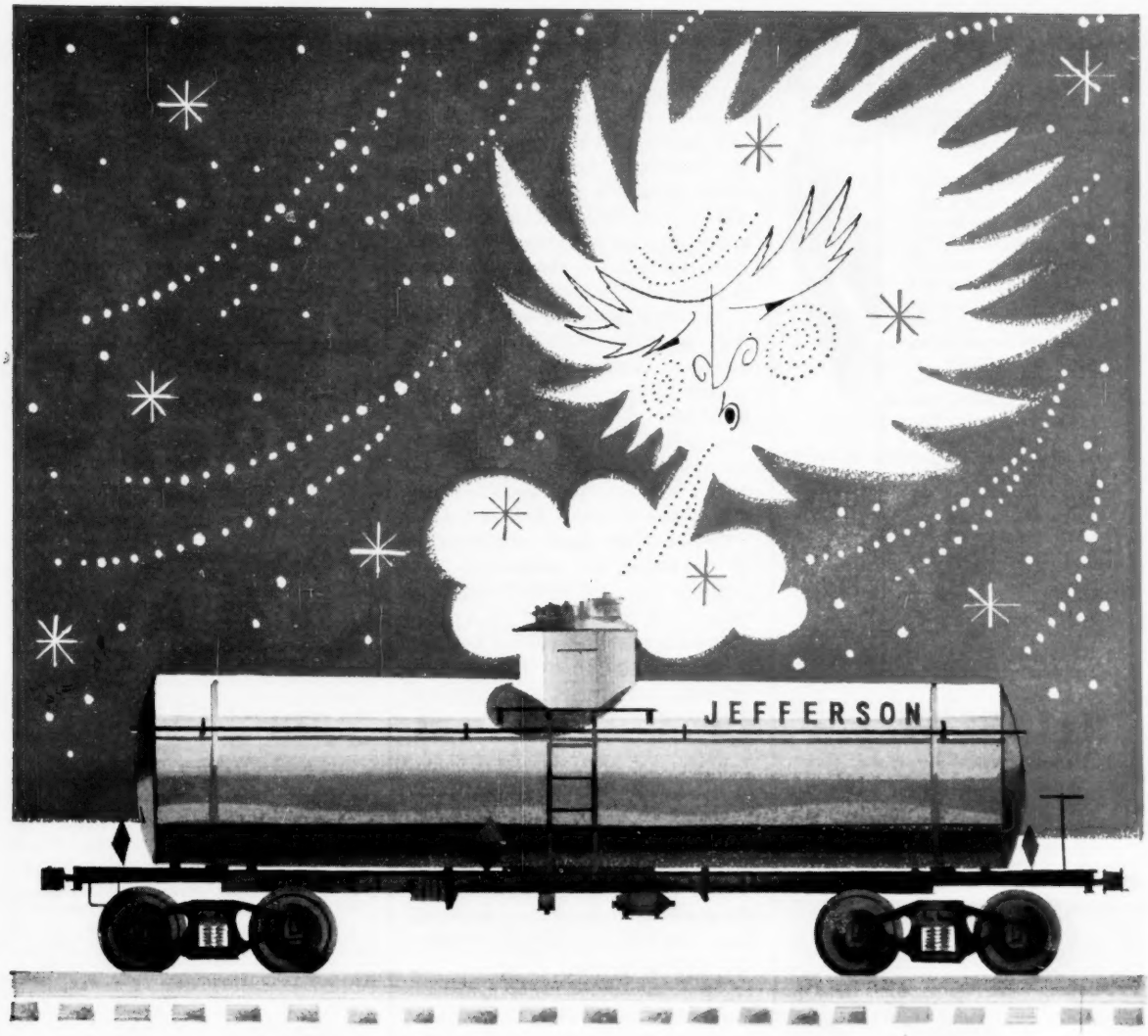
Besides use in floor polishes, the resins are also suggested for formulations of spray shoe dressings, printing inks and textile sizes, as a replacement for aqueous amine-shellac cuts in playing card coatings, and as compounds for felting hats.

The resins are compatible with polymer latexes and other resin dispersions used in the newer "waxless" polishes, are also compatible with natural and synthetic waxes used in conventional floor polishes.

Rockets to Specialties

Currently countering the trend of companies seeking to get into the missile and rocket field is Aerojet-General Corp. (Azusa, Calif.). Aerojet, whose chemical division has heretofore been involved solely with research and development of advanced fuels for rockets and other highly classified research and development for the military, is now taking its first cautious steps into the commercial field, is putting two chemical specialty items into small-scale production.

Ready now for the commercial market is a battery system derived from the zinc-silver chloride couple. Designed to deliver low currents (in



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SPECIALTIES

the milliampere range) continuously for two years, this water-activated battery can be used as the power supply for transistors, signal lights and cathodic protection devices. The battery will be produced according to customer specification rather than as a shelf item, will sell for about 50% more than low-drain mercury batteries.

The other upcoming item is a catalyst for polyurethane foam. It was developed to increase rate of cure, to provide fewer odor problems with foam and to be free of the disadvantages that impart instability toward hydrolysis. One obvious possibility as a customer: Aerojet's parent firm, General Tire & Rubber Co.

Choice of the items for kicking off its entry into the commercial field stemmed from the consideration that each could be produced on a small scale with existing facilities. But now in design stage is an expansion of facilities that can serve as general-purpose pilot plants for other commercial items.

Production will probably be limited to specialty rather than volume items, to make use of the specialized background of the division's personnel. Many of Aerojet's staff of 140 are trained in such special techniques as the handling of hazardous chemicals, high- and low-temperature chemistry and polymerization.

The company's chemical division was established in '44 as an analytical laboratory to provide quality control, is managed by Don L. Armstrong, who helped pioneer the research of ultraenergy propellents (*CW, Oct. 12. p. 153*).

PRODUCTS

• **Another DET Maker:** Cowles Chemical Co. (Cleveland) is the latest company to be attracted to the repellent field. It's now turning out diethyltoluamide at the company's Skaneateles Falls, N.Y., plant. Its product has a minimum metal isomer content of 95%, is shipped under the tradename Detamide 95.

• **Ultrasonic Detergent:** Acoustica Associates Inc. (Mineola, N. Y.) has developed a water-based detergent suitable for use with all types of ultrasonic cleaning systems. Called Ultrasonic Cleaner 715, the detergent is used in proportions of several ounces per gallon of warm water.

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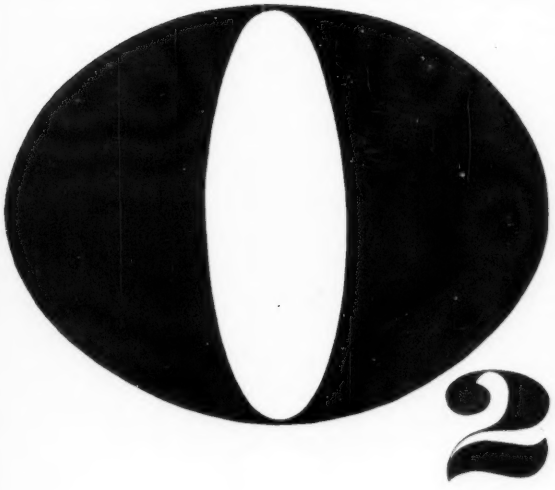

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New FLEXOL 380—low cost answer to lacquer marring problems

Trade-Mark

Now, you can make vinyls with remarkable resistance to nitrocellulose lacquer marring with FLEXOL *plasticizer 380 and, you can do this at low cost.*

In the past, polymeric-type plasticizers were used to achieve freedom from nitrocellulose mar in vinyl plastics. Now, FLEXOL 380 gives you this outstanding mar resistance with improved low-temperature performance and efficiency—*and, at lower cost per pound.*

Tests* prove that the mar resistance of vinyls containing FLEXOL 380 is comparable to that obtained with commonly used polymeric plasticizers. Look at these results—

Plasticizers (at 50 PHR)	% Softening of N/C lacquer, 40°C. 1 Day	2 Days	3 Days
FLEXOL 380	<10	13	20
Dioctyl phthalate	45	60	57
Polymeric A	18	—	—
Polymeric B	17	—	—
Polymeric C	45	—	—

*with a Walker-Steele Swinging Beam Hardness tester

FLEXOL plasticizer 380 gives other performance characteristics typical of general-purpose phthalate plasticizers. It is completely compatible with vinyl chloride resins. With FLEXOL 380 you get the same excellent heat and light stability, good low-temperature properties, and outstanding electrical properties obtained with FLEXOL plasticizer DOP. Plastisols prepared with FLEXOL 380 are characterized by low initial viscosity and excellent viscosity stability.

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- *furniture and automotive upholstery*
- *doll parts*
- *handbags*
- *outerwear jackets*
- *tablecloths and place mats*
- *vinyl balls and sponges*

Write for samples and technical information today. Address Union Carbide Chemicals Company, Department B, Room 328, 30 East 42nd Street, New York 17, New York. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Ltd., Toronto.

"Flexol" is a registered trade-mark of Union Carbide Corporation.

UNION CARBIDE

CHEMICALS

Union Carbide Chemicals Company
Division of Union Carbide Corporation
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